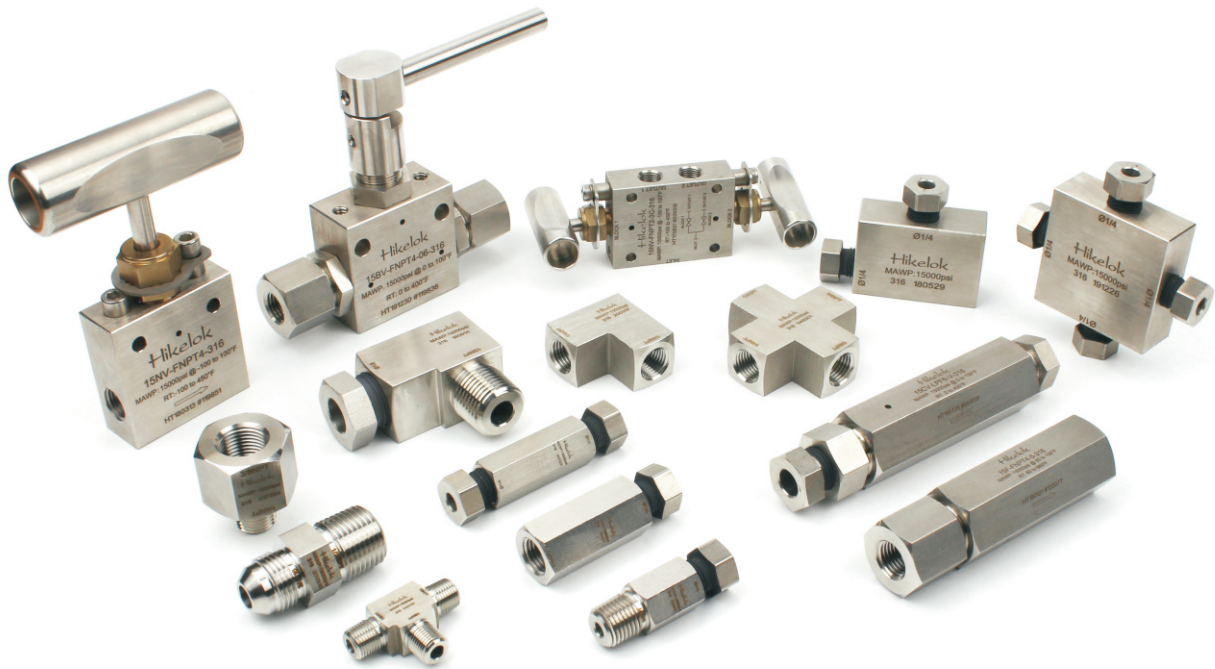




Ultra-High Pressure

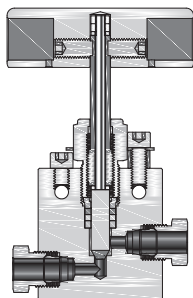
Low Pressure Valves,
Fittings and Tubing 15000 psig

15 and P Series

Contents

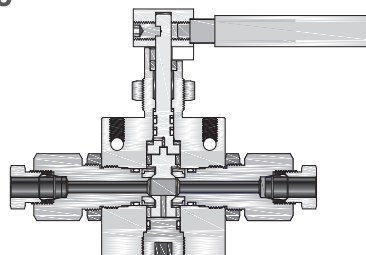
Needle Valves (15NV Series)

12-3



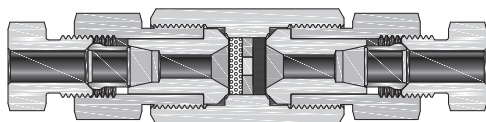
Ball Valves (15BV Series)

12-10



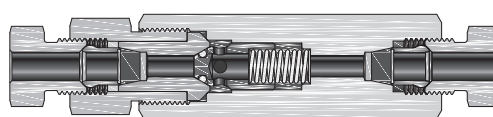
Filters (15F Series)

12-13



Check Valves (15CV Series)

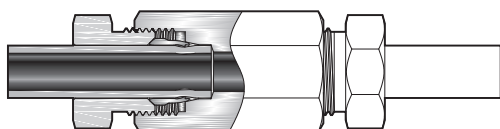
12-17



Single Ferrule

Compression Fittings (15 Series)

12-20



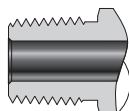
Tubing (15 Series)

12-23



Pipe Connection Fittings (P Series)

12-24



Needle Valves

15NV Series

Features

- ❖ Tubing sizes available for 1/8", 1/4", 3/8", 1/2"
- ❖ Non-rotating stem prevents stem/seat galling.
- ❖ 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 and provides dependable stem and body sealing
- ❖ Graphite packing working temperature up to 800°F(427°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



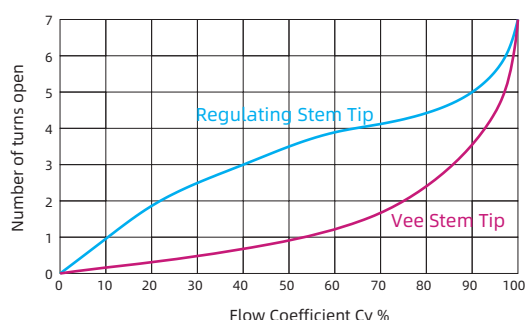
Technical Data

Connection Size	Connection Type	Orifice in.(mm)	Cv	Working Pressure psig(bar)
1/8" OD.	LPF2	0.094(2.39)	0.12	15,000(1034)
1/4" OD.	LPF4	0.188(4.77)	0.65	15,000(1034)
3/8" OD.	LPF6	0.250(6.35)	0.95	15,000(1034)
1/2" OD.	LPF8	0.375(9.53)	1.90	10000(689)
1/8	NPT/BSPT	0.078(1.98)	0.11	15,000(1034)
1/4	NPT/BSPT	0.203(5.16)	0.63	15,000(1034)
3/8	NPT/BSPT	0.219(5.56)	0.75	15,000(1034)
1/2	NPT/BSPT	0.312(7.92)	1.30	15,000(1034)

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 temperature
PTFE packing : -65°F (-53°C) to 450°F (232°C)
RPTFE glass packing : -65°F(-53°C) to 600°F (316°C)
Graphite packing : -65°F (-53°C) to 800°F (427°C)

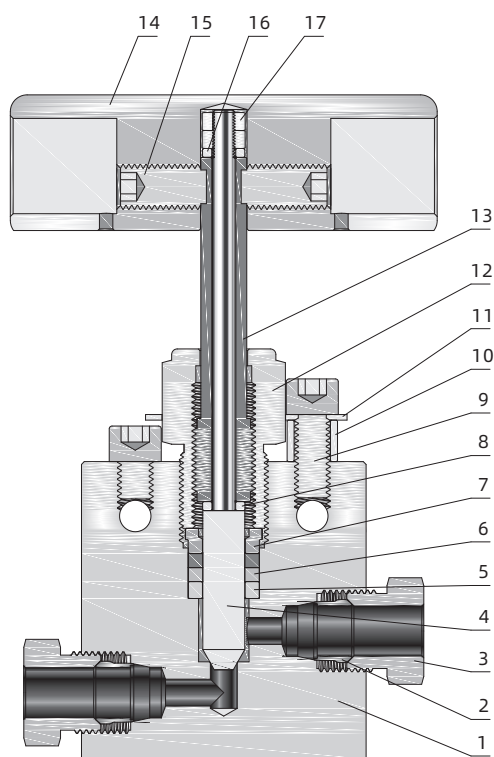
Flow Data at 100°F(38°C)



Pressure vs. Temperature

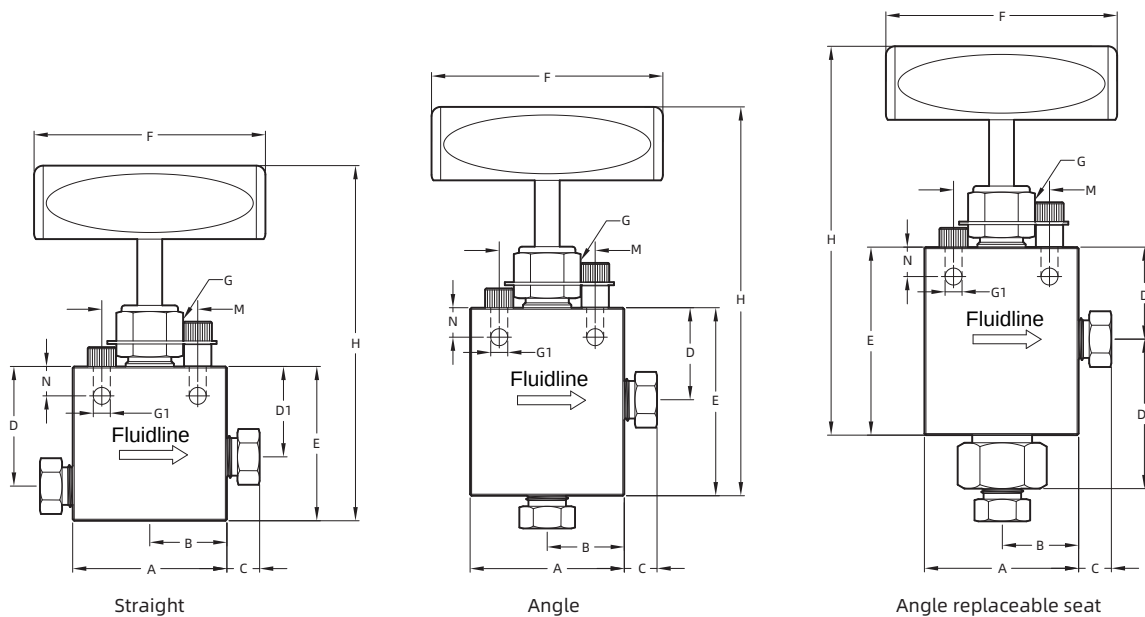
Temperature, °F(°C)	Working Pressure, psig(bar)
-65(-53)	15000(1034)
0(-18)	15000(1034)
100(37)	15000(1034)
200(93)	15000(1034)
300(148)	14600(1006)
400(204)	14000(965)
500(260)	13500(931)
600(316)	13000(896)
700(371)	12500(862)
800(427)	12000(827)

Standard Materials of Construction



Component		Material Grade / ASTM Specification
1	Body	316 S.S. / A479
2	Ferrule	316 S.S. / A479
3	Nut	316 S.S. / A479
4	Stem	630 S.S. / 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	C63000 / B150
13	Stem guard	316 S.S. / A479
14	Handle	303 S.S.
15	Screw	304 S.S.
16	Gland	C63000 / B150
17	Nut	304 S.S.

Dimensions



Dimensions(Straight)

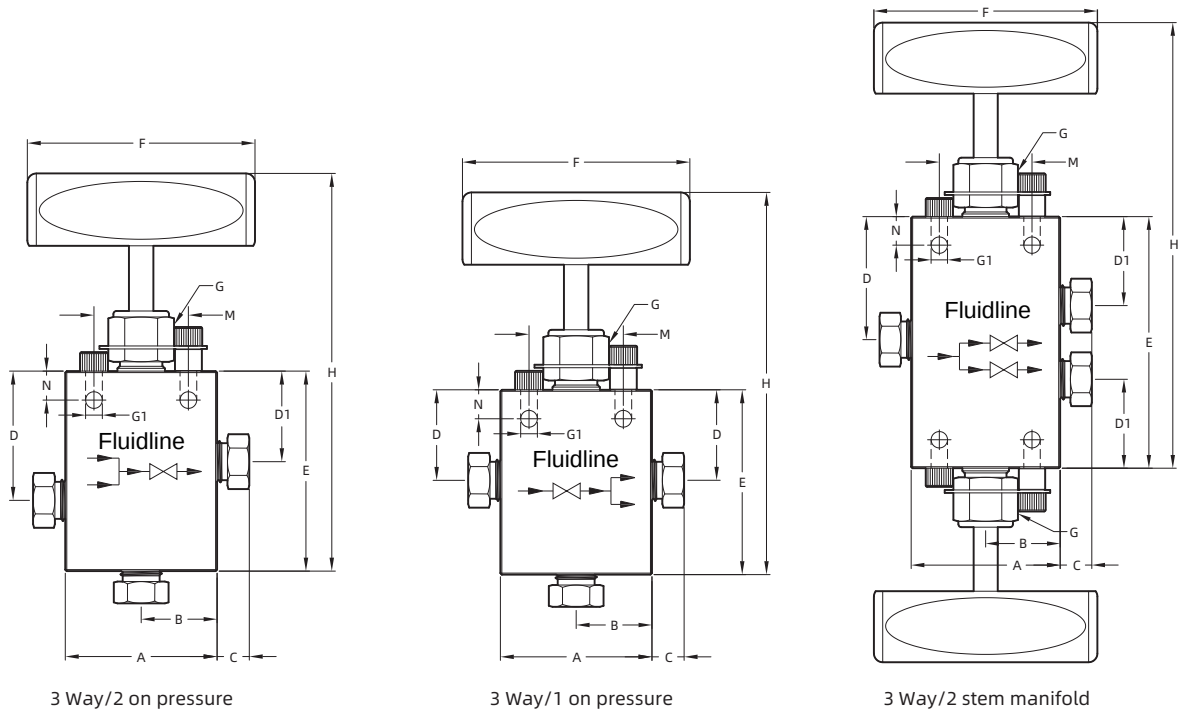
Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
15NV-LPF2-	LPF2	0.094 (2.39)	1.50 (38.1)	0.75 (19.1)	0.31 (7.90)	1.06 (26.9)	0.81 (206)	1.38 (35.1)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	3.75 (95.3)	0.56 (14.2)	0.31 (7.9)	0.62 (15.8)
15NV-LPF4-	LPF4	0.188 (4.77)	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)	4.50 (114.3)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NV-LPF6-	LPF6	0.250 (6.35)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.62 (41.2)	1.19 (30.2)	2.00 (50.8)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	4.50 (114.3)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NV-LPF8-	LPF8	0.375 (9.53)	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)	5.95 (151.4)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)

Dimensions(Angle)

Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
15NV-LPF2-A-	LPF2	0.094 (2.39)	1.50 (38.1)	0.75 (19.1)	0.31 (7.9)	0.81 (20.6)	—	1.56 (39.6)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	3.94 (100.1)	0.56 (14.2)	0.31 (7.9)	0.62 (15.8)
15NV-LPF4-A-	LPF4	0.188 (4.77)	2.00 (50.8)	1.00 (25.4)	0.44 (11.2)	1.19 (30.2)	—	2.43 (61.7)	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)
15NV-LPF6-A-	LPF6	0.250 (6.35)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.19 (30.2)	—	2.43 (61.7)	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)
15NV-LPF8-A-	LPF8	0.375 (9.53)	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)	6.45 (163.8)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)

Dimensions(Angle/replaceable seat)

Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
15NV-LPF2-AR-	LPF2	0.094 (2.39)	1.50 (38.1)	0.75 (19.1)	0.31 (7.9)	0.81 (20.6)	1.28 (32.5)	1.56 (39.6)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	4.50 (114.3)	0.56 (14.2)	0.31 (7.9)	0.62 (1.58)
15NV-LPF4-AR-	LPF4	0.188 (4.77)	2.00 (50.8)	1.00 (25.4)	0.44 (11.2)	1.19 (30.2)	1.88 (47.8)	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 (1.91)
15NV-LPF6-AR-	LPF6	0.250 (6.35)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.19 (30.2)	2.19 (55.6)	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 (1.91)
15NV-LPF8-AR-	LPF8	0.375 (9.53)	2.50 (63.5)	1.25 (31.8)	0.53 (13.5)	1.75 (44.5)	2.50 (63.5)	3.25 (82.6)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	7.51 (190.8)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)



Dimensions(3-way/2 on pressure)

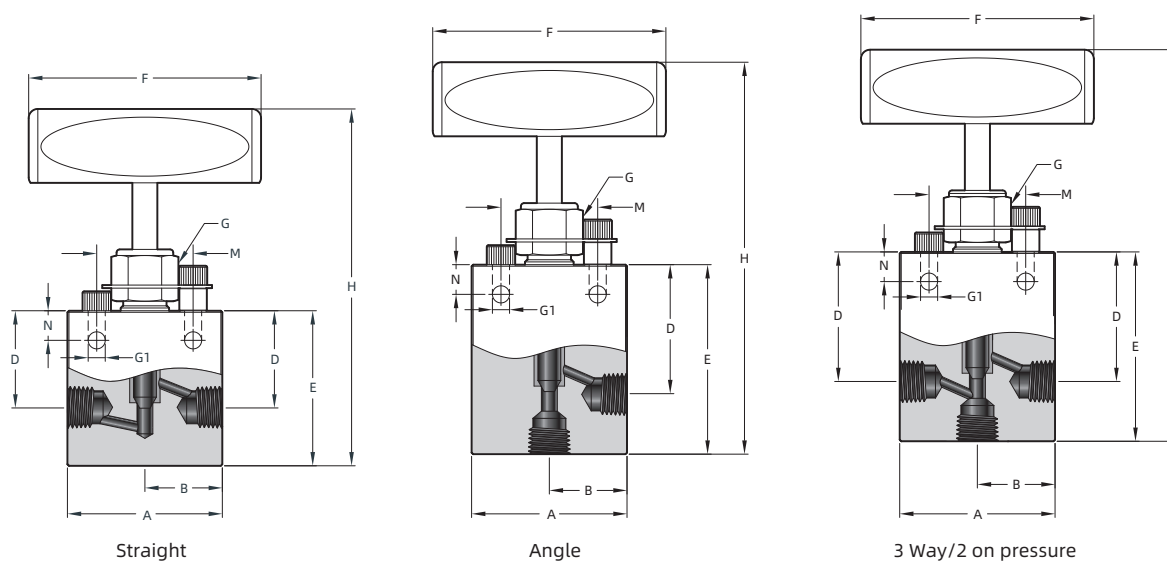
Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
15NV-LPF2-3A-	LPF2	0.094 (2.39)	1.50 (38.1)	0.75 (19.1)	0.31 (7.9)	1.06 (26.9)	0.81 (20.6)	1.69 (42.9)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	4.06 (103.1)	0.56 (14.2)	0.31 (7.9)	0.62 (15.8)
15NV-LPF4-3A-	LPF4	0.188 (4.77)	2.00 (50.8)	1.00 (25.4)	0.44 (11.2)	1.62 (41.2)	1.19 (30.2)	2.62 (66.6)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.18 (131.6)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NV-LPF6-3A-	LPF6	0.250 (6.35)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.62 (41.2)	1.19 (30.2)	2.62 (66.6)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.18 (131.6)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NV-LPF8-3A-	LPF8	0.375 (9.53)	2.50 (63.5)	1.25 (31.8)	0.53 (13.5)	2.38 (60.5)	1.75 (44.5)	3.62 (92.0)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	6.70 (170.2)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)

Dimensions(3-way/1 on pressure)

Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
15NV-LPF2-3B-	LPF2	0.094 (2.39)	1.50 (38.1)	0.75 (19.1)	0.31 (7.9)	0.81 (20.6)	—	1.56 (39.6)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	3.94 (100.1)	0.56 (14.2)	0.31 (7.9)	0.62 (15.8)
15NV-LPF4-3B-	LPF4	0.188 (4.77)	2.00 (50.8)	1.00 (25.4)	0.44 (11.2)	1.19 (30.2)	—	2.43 (61.7)	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)
15NV-LPF6-3B-	LPF6	0.250 (6.35)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.19 (30.2)	—	2.43 (61.7)	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)
15NV-LPF8-3B-	LPF8	0.375 (9.53)	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)	6.45 (163.8)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)

Dimensions(3-way/2 stem manifold)

Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
15NV-LPF2-3C-	LPF2	0.094 (2.39)	1.50 (38.1)	0.75 (19.1)	0.31 (7.9)	1.12 (28.5)	0.81 (20.6)	2.25 (57.2)	1.75 (44.5)	0.62 (15.8)	0.17 (4.3)	4.63 (117.6)	0.56 (14.2)	0.31 (7.9)	0.62 (15.8)
15NV-LPF4-3C-	LPF4	0.188 (4.77)	2.00 (50.8)	1.00 (25.4)	0.44 (11.2)	1.69 (42.9)	1.19 (30.2)	3.38 (85.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.94 (150.9)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NV-LPF6-3C-	LPF6	0.250 (6.35)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.69 (42.9)	1.19 (30.2)	3.38 (85.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.94 (150.9)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NV-LPF8-3C-	LPF8	0.375 (9.53)	2.50 (63.5)	1.25 (31.8)	0.53 (13.5)	2.56 (65.0)	1.75 (44.5)	5.12 (130.1)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	8.20 (208.3)	0.69 (17.5)	0.50 (12.7)	1.00 (25.4)



Dimensions(Straight)

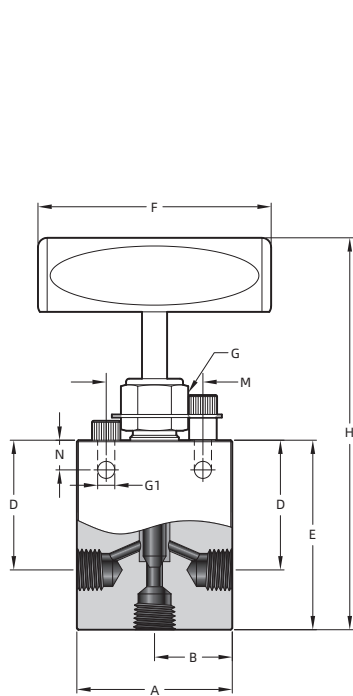
Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
15NV-FNPT2-	FNPT2	0.078 (1.98)	1.50 (38.1)	0.75 (19.1)	—	0.82 (20.6)	—	1.25 (31.8)	1.75 (44.5)	0.56 (14.2)	0.17 (4.3)	2.53 (64.3)	0.56 (14.2)	0.31 (7.9)	0.63 (15.9)
15NV-FBT2-	FBT2														
15NV-FNPT4-	FNPT4	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)	4.63 (117.6)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NV-FBT4-	FBT4														
15NV-FNPT6-	FNPT6	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)	4.63 (117.6)	0.62 (15.8)	0.38 (9.7)	1.00 (25.4)
15NV-FBT6-	FBT6														
15NV-FNPT8-	FNPT8	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)	5.93 (150.6)	0.69 (17.5)	0.50 (12.7)	1.38 (35.1)
15NV-FBT8-	FBT8														

Dimensions(Angle)

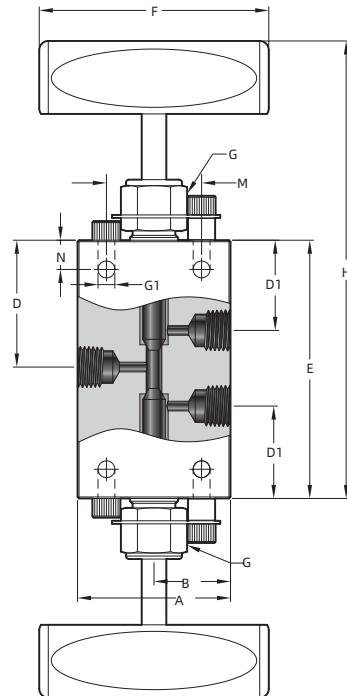
Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
15NV-FNPT2-A-	FNPT2	0.078 (1.98)	1.50 (38.1)	0.75 (19.1)	—	0.56 (14.2)	—	1.38 (34.9)	1.75 (44.5)	0.56 (14.2)	0.17 (4.3)	2.66 (67.6)	0.56 (14.2)	0.31 (7.9)	0.63 (15.9)
15NV-FBT2-A-	FBT2														
15NV-FNPT4-A-	FNPT4	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)	4.81 (122.2)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NV-FBT4-A-	FBT4														
15NV-FNPT6-A-	FNPT6	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)	4.81 (122.2)	0.62 (15.8)	0.38 (9.7)	1.00 (25.4)
15NV-FBT6-A-	FBT6														
15NV-FNPT8-A-	FNPT8	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)	6.43 (163.3)	0.69 (17.5)	0.50 (12.7)	1.38 (35.1)
15NV-FBT8-A-	FBT8														

Dimensions(3-way/2 on pressure)

Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
15NV-FNPT2-3A-	FNPT2	0.078 (1.98)	1.50	0.75	—	0.82	—	1.57	1.75	0.56	0.17	2.86	0.56	0.31	0.63
15NV-FBT2-3A-	FBT2		(38.1)	(19.1)	—	(20.6)	—	(40.0)	(44.5)	(14.2)	(4.3)	(72.6)	(14.2)	(7.9)	(15.9)
15NV-FNPT4-3A-	FNPT4	0.203 (5.2)	2.00	1.00	—	1.41	—	2.62	3.00	0.75	0.22	5.00	0.62	0.38	0.75
15NV-FBT4-3A-	FBT4		(50.8)	(25.4)	—	(35.8)	—	(66.6)	(76.2)	(19.1)	(5.6)	(127.0)	(15.8)	(9.7)	(19.1)
15NV-FNPT6-3A-	FNPT6	0.219 (5.56)	2.50	1.25	—	1.41	—	2.62	3.00	0.75	0.22	5.00	0.62	0.38	1.00
15NV-FBT6-3A-	FBT6		(63.5)	(31.8)	—	(35.8)	—	(66.6)	(76.2)	(19.1)	(5.6)	(127.0)	(15.8)	(9.7)	(25.4)
15NV-FNPT8-3A-	FNPT8	0.312 (7.92)	3.00	1.50	—	2.06	—	3.62	4.00	1.00	0.34	6.52	0.69	0.50	1.38
15NV-FBT8-3A-	FBT8		(76.2)	(38.1)	—	(52.3)	—	(92.0)	(101.6)	(25.4)	(8.6)	(165.6)	(17.5)	(12.7)	(35.1)



3 Way/1 on pressure



3 Way/2 stem manifold

Dimensions(3-way/1 on pressure)

Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
15NV-FNPT2-3B-	FNPT2	0.078 (1.98)	1.50	0.75	—	0.82	—	1.38	1.75	0.56	0.17	2.86	0.56	0.31	0.63
15NV-FBT2-3B-	FBT2		(38.1)	(19.1)	—	(20.6)	—	(35.0)	(44.5)	(14.2)	(4.3)	(72.6)	(14.2)	(7.9)	(15.9)
15NV-FNPT4-3B-	FNPT4	0.203 (5.2)	2.00	1.00	—	1.41	—	2.44	3.00	0.75	0.22	4.81	0.62	0.38	0.75
15NV-FBT4-3B-	FBT4		(50.8)	(25.4)	—	(35.8)	—	(62.0)	(76.2)	(19.1)	(5.6)	(122.2)	(15.8)	(9.7)	(19.1)
15NV-FNPT6-3B-	FNPT6	0.219 (5.56)	2.50	1.25	—	1.41	—	2.44	3.00	0.75	0.22	4.81	0.62	0.38	1.00
15NV-FBT6-3B-	FBT6		(63.5)	(31.8)	—	(35.8)	—	(62.0)	(76.2)	(19.1)	(5.6)	(122.2)	(15.8)	(9.7)	(25.4)
15NV-FNPT8-3B-	FNPT8	0.312 (7.92)	3.00	1.50	—	2.06	—	3.38	4.00	1.00	0.34	6.31	0.69	0.50	1.38
15NV-FBT8-3B-	FBT8		(76.2)	(38.1)	—	(52.3)	—	(85.9)	(101.6)	(25.4)	(8.6)	(160.3)	(17.5)	(12.7)	(35.1)

Dimensions(3-way/2 stem manifold)

Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
15NV-FNPT2-3C-	FNPT2	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)	0.56 (14.2)	0.17 (4.3)	3.30 (83.8)	0.56 (14.2)	0.31 (7.9)	0.63 (15.9)
15NV-FBT2-3C-	FBT2														
15NV-FNPT4-3C-	FNPT4	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)	5.75 (146.1)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
15NV-FBT4-3C-	FBT4														
15NV-FNPT6-3C-	FNPT6	0.219 (5.56)	2.50 (63.5)	1.25 (31.8)	—	1.69 (65.1)	1.19 (30.2)	3.38 (85.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.75 (146.1)	0.62 (15.8)	0.38 (9.7)	1.00 (25.4)
15NV-FBT6-3C-	FBT6														
15NV-FNPT8-3C-	FNPT8	0.312 (7.92)	3.00 (76.2)	1.50 (38.1)	—	2.56 (65.1)	1.75 (44.5)	5.12 (130.2)	4.00 (101.6)	1.00 (25.4)	0.34 (8.6)	8.05 (204.5)	0.69 (17.5)	0.50 (12.7)	1.38 (35.1)
15NV-FBT8-3C-	FBT8														

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

15NV — LPF4 — R — RG — A — 316

Series	Connector Sizes	Stem Tips	Packing	Flow Patterns	Body Material
15NV	LPF2 1/8"	Vee	PTFE	Straight	316 316 S.S.
	LPF4 1/4"	R Regulating	RG RPTFE Glass	A Angle	A825 Alloy 825
	LPF6 3/8"		G Graphite	AR Angle, replaceable seat	
	LPF8 1/2"			3A 3-way, 2 on pressure	
	FNPT2 1/8" Female NPT			3B 3-way, 1 on pressure	
	FNPT4 1/4" Female NPT			3C 3-way, 2 stem manifold	
	FNPT6 3/8" Female NPT				
	FNPT8 1/2" Female NPT				
	FBT2 1/8" Female BSPT				
	FBT4 1/4" Female BSPT				
	FBT6 3/8" Female BSPT				
	FBT8 1/2" Female BSPT				

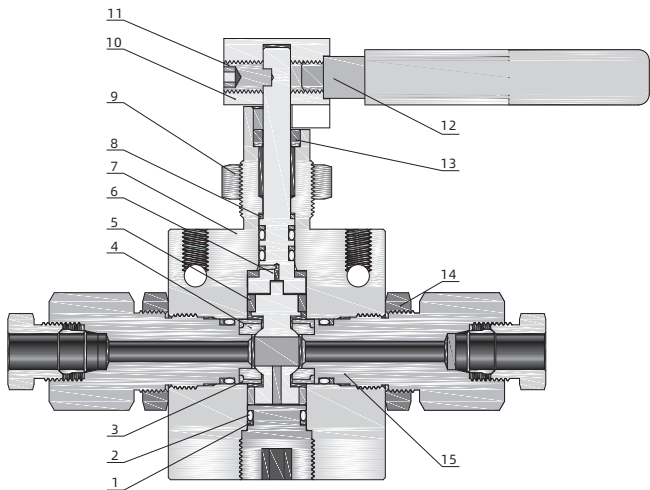
Ball Valves

15BV Series

Features

- ❖ Working pressure up to 15,000 psig (1034 bar)
- ❖ Working temperature from 0°F to 400°F (-18°C to 204°C)
- ❖ Two-way and three-way valve configurations
- ❖ PEEK seats offer excellent resistance to chemicals, heat, and wear/abrasion
- ❖ Full-port flow path minimizes pressure drop
- ❖ 316 cold worked stainless steel construction
- ❖ Wide selection of tube and pipe end connections available

Standard Materials of Construction

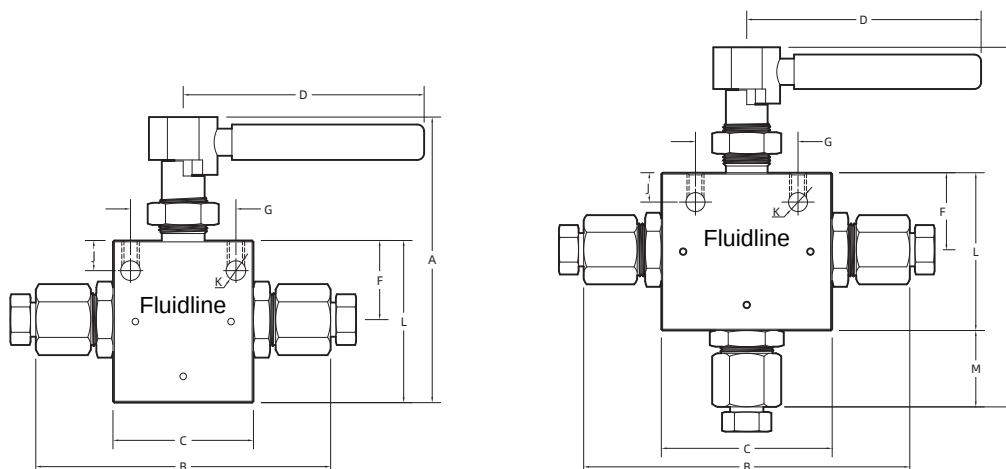


Component		Material Grade / ASTM Specification
1	Ring	PTFE / D1710
2	O-ring	FKM
3	Seat Retainer	316 S.S. / A479
4	Seat	PEEK
5	Bearing	PEEK
6	Stem	316 S.S. / A479
7	Body	316 S.S. / A479
8	Bearing	PEEK
9	Nut	316 S.S. / A479
10	Handle Seat	316 S.S. / A479
11	Screw	304 S.S.
12	Handle	304 S.S.
13	Sleeve	C63000 / B150
14	Lock Nut	316 S.S. / A479
15	Seat Gland	304 S.S. / A479

Pressure vs. Temperature

Temperature, °F(°C)	Working Pressure, psig(bar)
0(-18)	15,000(1034)
100(38)	15,000(1034)
200(93)	15,000(1034)
300(148)	15,000(1034)
400(204)	10,000(689)

Dimensions

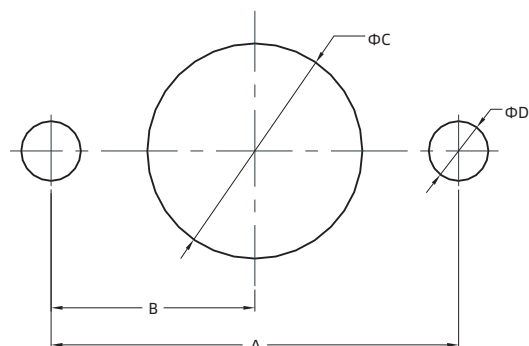


Body Style	Ordering Number	Connection Type and Size	CV	A	B	C	D	F	G	H	J	K	L	M	Thickness	Pressure at Room Temperature, psig(bar)
2-Way	15BV-LPF2-06-	LPF2	0.26	4.33 (110)	4.19 (106.5)	2 (50.8)	3.37 (85.6)	1.13 (28.6)	1.5 (38.1)	0.75 (19.1)	0.43 (10.9)	0.28 (7.1)	1.91 (48.4)	—	1 (25.4)	15000 (1034)
	15BV-LPF4-06-	LPF4	0.26													
	15BV-LPF6-06-	LPF6	1.51													
	15BV-LPF8-06-	LPF8														
	15BV-FNPT2-06-	1/8" Female NPT														
	15BV-FNPT4-06-	1/4" Female NPT														
	15BV-FNPT6-06-	3/8" Female NPT														
	15BV-FNPT8-06-	1/2" Female NPT														
	15BV-LPF8-10-	LPF8	3.51	4.97 (126.3)	5.53 (140.4)	3 (76.2)	4.99 (126.8)	1.38 (34.9)	2 (50.8)	1 (25.4)	0.41 (10.3)	0.28 (7.1)	2.5 (63.5)	—	1.38 (34.9)	
	15BV-FNPT4-10-	1/4" Female NPT														
	15BV-FNPT6-10-	3/8" Female NPT														
	15BV-FNPT8-10-	1/2" Female NPT														
	15BV-FNPT8-13-	1/2" Female NPT	10.2	5.95 (151.1)	7.73 (196.5)	4.13 (104.8)	5.13 (130.2)	1.76 (44.7)	3 (76.2)	1.5 (38.1)	0.5 (12.7)	0.28 (7.1)	3.09 (78.6)	—	1.75 (44.5)	10000 (689)
	15BV-FNPT12-13-	3/4" Female NPT														
	15BV-FNPT16-13-	1" Female NPT														
3-Way	15BV-LPF2-05-3-	LPF2	0.13	5.64 (143.4)	4.72 (119.9)	2.5 (63.5)	3.37 (85.6)	1.13 (28.6)	1.5 (38.1)	0.75 (19.1)	0.43 (10.9)	0.28 (7.1)	2.25 (57.2)	0.97 (24.6)	1 (25.4)	15000 (1034)
	15BV-LPF4-05-3-	LPF4	0.23													
	15BV-LPF6-05-3-	LPF6	0.5													
	15BV-LPF8-05-3-	LPF8														
	15BV-FNPT2-05-3-	1/8" Female NPT														
	15BV-FNPT4-05-3-	1/4" Female NPT														
	15BV-FNPT6-05-3-	3/8" Female NPT														
	15BV-FNPT8-05-3-	1/2" Female NPT														
	15BV-LPF8-10-3-	LPF8	2.1	6.55 (466.4)	5.54 (140.8)	3 (76.2)	4.99 (126.8)	1.38 (34.9)	2 (50.8)	1 (25.4)	0.41 (10.3)	0.28 (7.1)	2.88 (73)	1.19 (30.2)	1.38 (34.9)	
	15BV-FNPT4-10-3-	1/4" Female NPT														
	15BV-FNPT6-10-3-	3/8" Female NPT	4.4	7.83 (198.8)	7.77 (197.4)	4.13 (104.8)	5.13 (130.2)	1.66 (42.2)	3 (76.2)	1.5 (38.1)	0.5 (12.7)	0.28 (7.1)	3.34 (84.9)	1.7 (43.2)	1.75 (44.5)	10000 (689)
	15BV-FNPT8-10-3-	1/2" Female NPT														
	15BV-FNPT8-13-3-	1/2" Female NPT														
	15BV-FNPT12-13-3-	3/4" Female NPT														
	15BV-FNPT16-13-3-	1" Female NPT														

Panel Mounting Dimensions

Body Style	Orifice No.	A	B	C	D
		in.(mm)			
2-Way	06	1.5 (38.1)	0.75 (19.1)	1.06 (26.9)	0.28 (7.1)
	10	2 (50.8)	1 (25.4)	1.5 (38.1)	0.28 (7.1)
	13	3 (76.2)	1.5 (38.1)	1.88 (47.6)	0.28 (7.1)
3-Way	05	1.5 (38.1)	0.75 (19.1)	1.06 (26.9)	0.28 (7.1)
	10	2 (50.8)	1 (25.4)	1.5 (38.1)	0.28 (7.1)
	13	3 (76.2)	1.5 (38.1)	1.88 (47.6)	0.28 (7.1)

❖ Note: Body Mounting 1/4-20 Thread



How to Order

15BV — LPF4 — 05 — 3 — 316

Series	Connector Sizes	Orifice No.	Flow Patterns	Body Material
15BV	LPF2 1/8" Tubing	For 2-way	Straight	316 316 S.S.
	LPF4 1/4" Tubing	06 1/4"	3 3-way	
	LPF6 3/8" Tubing	10 3/8"		
	LPF8 1/2" Tubing	13 1/2"		
	FNPT2 1/8" NPT(Female)	For 3-way		
	FNPT4 1/4" NPT(Female)	05 3/16"		
	FNPT6 3/8" NPT(Female)	10 3/8"		
	FNPT8 1/2" NPT(Female)	13 1/2"		
	FNPT12 3/4" NPT(Female)			
	FNPT16 1" NPT(Female)			

❖ 3/4" and 1" Female NPT Working pressure to 10000psig

Filters

15F Series

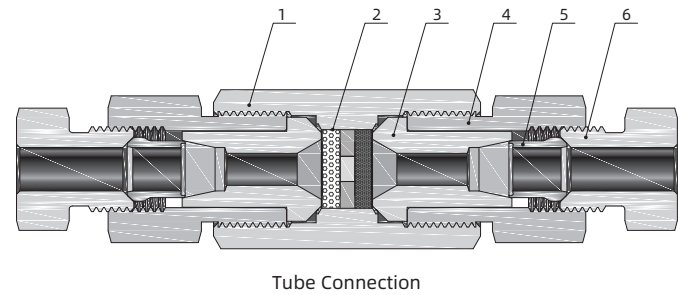
Dual-Disc Line Filters

Features

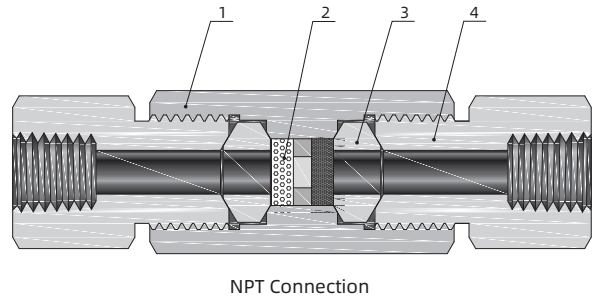
- ❖ Working pressure up to 15,000 psig (1034 bar)
- ❖ Working temperature range:
 - Tubing connection: -65°F to 650°F (-53°C to 343°C)
 - Pipe connection: -65°F to 450°F (-53°C to 232°C)
- ❖ Connection types and sizes:
 - 1/8", 1/4", 3/8" and 1/2" O.D. tubing
 - 1/8", 1/4", 3/8", 1/2", 3/4" and 1" Female NPT
- ❖ Dual-disc design allows the upstream filter element to trap the large particulate contaminants before they can reach and clog the smaller pore-size downstream element
- ❖ Downstream/upstream element nominal pore size: 5/10, 10/35 and 35/65 µm. Other element combinations available on request
- ❖ Easy to replace filter elements
- ❖ Pressure differential not to exceed 1000 psig (68.9 bar) in a flowing condition



Standard Materials of Construction

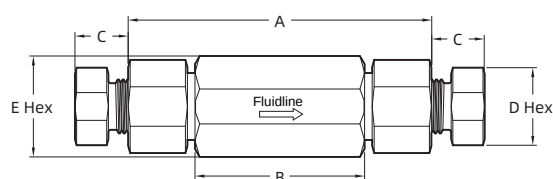


Component		Material Grade / ASTM Specification
1	Body	316 S.S. / A479
2	Filter Element	Sintered 316 S.S.
3	Cover	316 S.S. / A479
4	Cover Gland	316 S.S. / A479
5	Ferrule	316 S.S. / A479
6	Nut	316 S.S. / A479

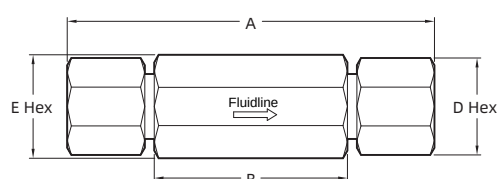


Component		Material Grade / ASTM Specification
1	Body	316 S.S. / A479
2	Filter Element	Sintered 316 S.S.
3	Cover	316 S.S. / A479
4	Cover Gland	316 S.S. / A479

Dimensions



Tube Connection



NPT Connection

Ordering Number	Connection Type	Orifice, in.(mm)	Nominal Pore Size (µm)	Effective Filter Element Area in. ² (mm ²)	A	B	C	D Hex	E Hex
15F-LPF2-0510-	LPF2	0.094 (2.39)	5/10	0.06(38.70)	2.31 (58.67)	1.25 (31.75)	0.31 (7.87)	0.38 (9.6)	0.63 (15.88)
15F-LPF2-1035-			10/35						
15F-LPF2-3565-			35/65						
15F-LPF4-0510-	LPF4	0.125 (3.18)	5/10	0.15(96.77)	2.94 (75.56)	1.68 (42.67)	0.44 (11.17)	0.63 (15.88)	0.81 (20.57)
15F-LPF4-1035-			10/35						
15F-LPF4-3565-			35/65						
15F-LPF6-0510-	LPF6	0.188 (4.78)	5/10	0.15(96.77)	2.94 (75.56)	1.68 (42.67)	0.53 (13.46)	0.75 (19.05)	1.00 (25.4)
15F-LPF6-1035-			10/35						
15F-LPF6-3565-			35/65						
15F-FNPT2-0510-	FNPT2	0.13 (3.2)	5/10	0.06(38.7)	2.79 (70.8)	1.50 (38.1)	–	0.63 (15.9)	0.63 (15.9)
15F-FNPT2-1035-			10/35						
15F-FNPT2-3565-			35/65						
15F-FNPT4-0510-	FNPT4	0.19 (4.8)	5/10	0.15(96.8)	4.15 (105.5)	2.19 (55.6)	–	0.94 (23.8)	1.00 (25.4)
15F-FNPT4-1035-			10/35						
15F-FNPT4-3565-			35/65						
15F-FNPT6-0510-	FNPT6	0.19 (4.8)	5/10	0.15(96.8)	4.15 (105.5)	2.19 (55.6)	–	1.13 (28.6)	1.13 (28.6)
15F-FNPT6-1035-			10/35						
15F-FNPT6-3565-			35/65						
15F-FNPT8-0510-	FNPT8	0.31 (7.9)	5/10	0.25(161.3)	5.27 (133.8)	2.94 (74.6)	–	1.38 (35.0)	1.38 (35.0)
15F-FNPT8-1035-			10/35						
15F-FNPT8-3565-			35/65						

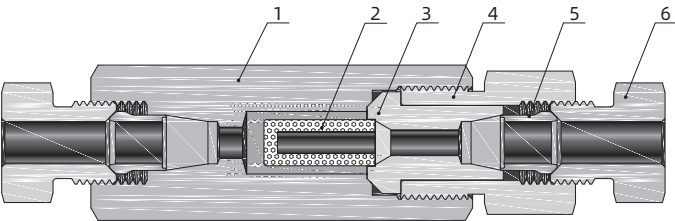
❖ All dimensions for reference only and subject to change.

Cup-Type Line Filters

Features

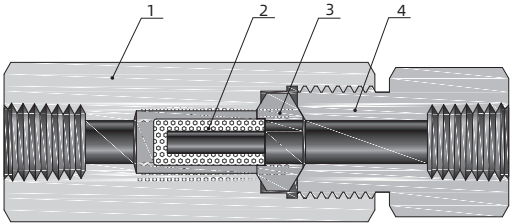
- ❖ Working pressure up to 15,000 psig(1034 bar)
- ❖ Working temperature range:
Tubing connection: -100°F to 650°F(-73°C to 343°C)
NPT connection: -65°F to 450°F(-53°C to 232°C)
- ❖ Connection types and sizes:
1/8", 1/4", 3/8" and 1/2" O.D. tubing
1/8", 1/4", 3/8", 1/2", 3/4" and 1" Female NPT
- ❖ Cup design to offer about six times the effective filter area as compared to disc-type units, and recommended in systems requiring both maximum filter surface area and high flow rates ·Nominal pore sizes for filter elements: 5, 35 and 65 µm
- ❖ Easy to replace filter elements
- ❖ Pressure differential not to exceed 1000 psig(69 bar) in a flowing condition

Standard Materials of Construction



Tube Connection

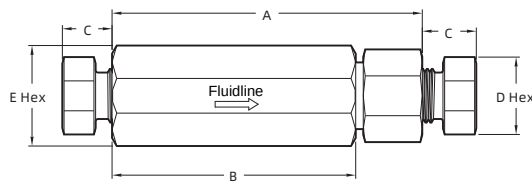
Component		Material Grade / ASTM Specification
1	Body	316 S.S. / A479
2	Filter Element	Sintered 316 S.S.
3	Cover	316 S.S. / A479
4	Cover Gland	316 S.S. / A479
5	Ferrule	316 S.S. / A479
6	Nut	316 S.S. / A479



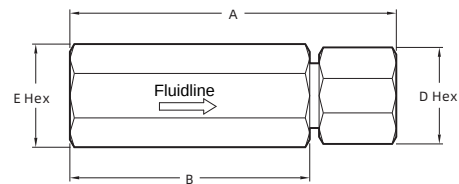
NPT Connection

Component		Material Grade / ASTM Specification
1	Body	316 S.S. / A479
2	Filter Element	Sintered 316 S.S.
3	Cover	316 S.S. / A479
4	Cover Gland	316 S.S. / A479

Dimensions



Tube Connection



NPT Connection

Ordering Number	Connection Type	Orifice, in.(mm)	Nominal Pore Size (µm)	Effective Filter Element Area in. ² (mm ²)	A	B	C	D Hex	E Hex
15F-LPF4-5-	LPF4	0.188 (4.78)	5	0.81(522.57)	3.18 (80.77)	2.56 (65.02)	0.44 (11.17)	0.63 (15.88)	0.81 (20.57)
15F-LPF4-35-			35						
15F-LPF4-65-			65						
15F-LPF6-5-	LPF6	0.312 (7.92)	5	0.81(522.57)	3.56 (90.42)	3.00 (76.20)	0.53 (13.46)	0.75 (19.05)	1.00 (25.40)
15F-LPF6-35-			35						
15F-LPF6-65-			65						
15F-FNPT2-5-	FNPT2	0.13 (3.2)	5	0.38(245.0)	2.58 (65.6)	1.94 (49.2)	-	0.63 (15.9)	0.63 (15.9)
15F-FNPT2-35-			35						
15F-FNPT2-65-			65						
15F-FNPT4-5-	FNPT4	0.31 (7.9)	5	0.81(522.6)	3.66 (93.0)	2.69 (68.3)	-	0.94 (23.8)	1.00 (25.4)
15F-FNPT4-35-			35						
15F-FNPT4-65-			65						
15F-FNPT6-5-	FNPT6	0.31 (7.9)	5	0.81(522.6)	3.66 (93.0)	2.69 (68.3)	-	1.13 (28.6)	1.13 (28.6)
15F-FNPT6-35-			35						
15F-FNPT6-65-			65						
15F-FNPT8-5-	FNPT8	0.44 (11.1)	5	1.53(987.1)	4.55 (115.6)	3.37 (85.7)	-	1.38 (35.0)	1.38 (35.0)
15F-FNPT8-35-			35						
15F-FNPT8-65-			65						

❖ All dimensions for reference only and subject to change.

How to Order

15F — FNPT8 — 5 — 316

Series	Connector Sizes	Nominal Pore Size	Body Material
15F	LPF2 1/8" Tubing	Dual-Disc Line Filters	316 316 S.S.
	LPF4 1/4" Tubing	0510 5/10 µm	316L 316L S.S.
	LPF6 3/8" Tubing	1035 10/35 µm	
	LPF8 1/2" Tubing	3565 35/65 µm	
	FNPT2 1/8" NPT(Female)	Cup-Type Line Filters	
	FNPT4 1/4" NPT(Female)	5 5 µm	
	FNPT6 3/8" NPT(Female)	35 35 µm	
	FNPT8 1/2" NPT(Female)	65 65 µm	
	FNPT12 3/4" NPT(Female)		
	FNPT16 1" NPT(Female)		

❖ 3/4" and 1" Female NPT Working pressure to 10000 psig

Check Valves

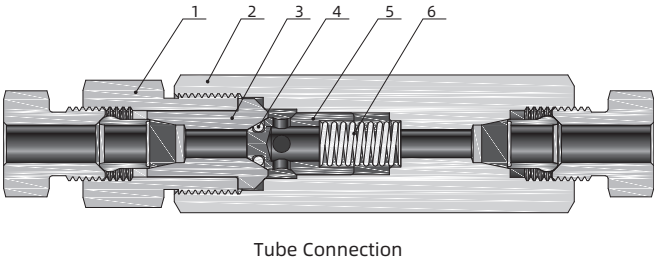
15CV Series

Features

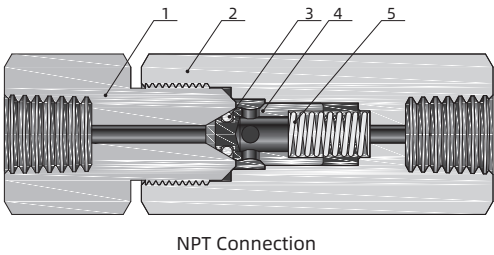
- ❖ Working pressure up to 15,000 psig (1034 bar)
- ❖ Working temperature from 0°F to 400°F (-18°C to 204°C)
- ❖ Cracking Pressure: 14 psi - 26 psi (0.966 bar - 1.794 bar)
- ❖ Tubing sizes available for 1/8", 1/4", 3/8"
- ❖ Provides unidirectional flow and tight shut-off for liquids and gases with high reliability.
When differential drops below cracking pressure, valve shuts off (Not for use as relief valve)
- ❖ Resilient O-ring seat design for noise-free closing and zero leakage



Standard Materials of Construction

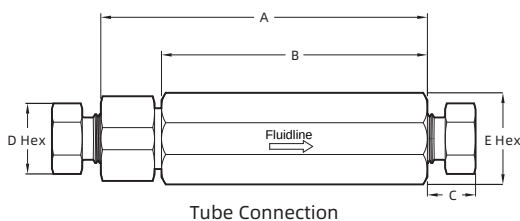


Component		Material Grade / ASTM Specification
1	Cover Gland	316 S.S. / A479
2	Valve Body	316 S.S. / 479
3	Cover	316 S.S. / 479
4	O-ring	FKM
5	Poppet	316 S.S. / 479
6	Spring	300 Series Stainless Steel



Component		Material Grade / ASTM Specification
1	Cover Gland	316 S.S. / A479
2	Valve Body	316 S.S. / A479
3	O-ring	FKM
4	Poppet	316 S.S. / A479
5	Spring	300 Series Stainless Steel

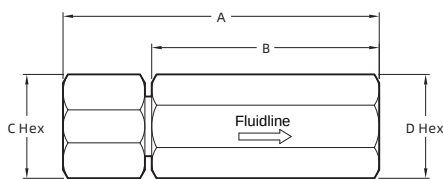
Dimensions



Tube Connection

Ordering Number	Connection Type	Orifice, in.(mm)	Cv	A	B	C	D	E
15CV-LPF2-V-	LPF2	0.094 (2.39)	0.15	2.25 (57.15)	1.88 (47.75)	0.31 (7.87)	0.50 (12.7)	0.63 (16.00)
15CV-LPF4-V-	LPF4	0.188 (4.78)	0.63	3.18 (80.77)	2.56 (65.02)	0.44 (11.18)	0.63 (16.00)	0.81 (20.57)
15CV-LPF6-V-	LPF6	0.250 (6.35)	1.70	3.56 (90.42)	3.00 (76.20)	0.53 (13.46)	0.75 (19.05)	1.00 (25.40)

❖ All dimensions for reference only and subject to change.



NPT Connection

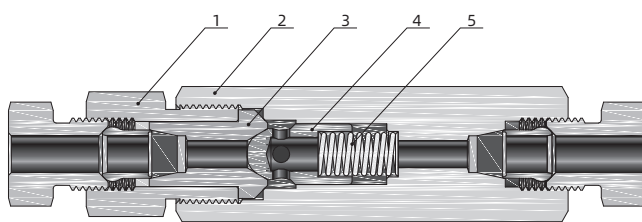
Ordering Number	Connection Type	Orifice, in.(mm)	Cv	A	B	C	D
15CV-FNPT4-V-	FNPT4	0.12 (3.05)	0.28	3.37 (85.60)	2.38 (60.33)	0.81 (20.57)	0.81 (20.57)
15CV-FNPT6-V-	FNPT6	0.22 (5.59)	0.84	3.95 (100.33)	2.88 (73.15)	1.00 (25.4)	1.00 (25.4)
15CV-FNPT8-V-	FNPT8	0.36 (9.14)	2.30	5.36 (136.14)	3.88 (98.55)	1.19 (30.23)	1.38 (35.05)

❖ All dimensions for reference only and subject to change.

Features

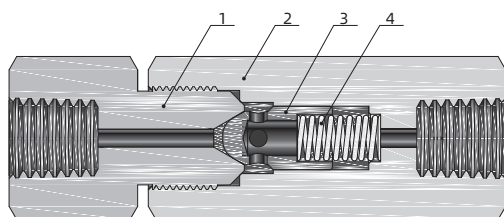
- ❖ Working pressure up to 15,000 psig (1034 bar)
- ❖ Working temperature from 0°F to 650°F (-18°C to 343°C)
- ❖ Cracking Pressure: 14 psi - 26 psi (0.966 bar - 1.794 bar)
- ❖ Tubing sizes available for 1/8", 1/4", 3/8"
- ❖ Prevents reverse flow where leak-tight shut-off is not mandatory (Not for use as relief valve)
- ❖ An integral design of the ball and poppet to assure positive, in-line seating without "chatter"
- ❖ Poppet designed essentially for axial flow with minimum pressure drop
- ❖ Optional wet cap gland and ball cone material for longer service life

Standard Materials of Construction



Tube Connection

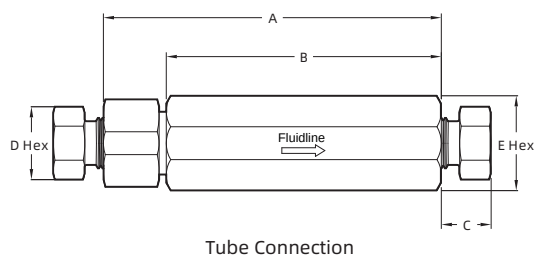
Component	Material Grade / ASTM Specification
1	Cover Gland
2	Valve Body
3	Cover
4	Poppet
5	Spring



NPT Connection

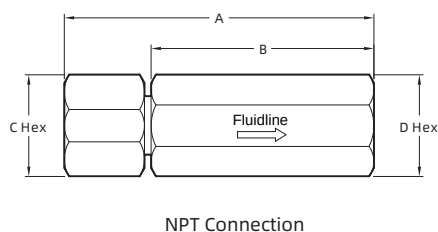
Component	Material Grade / ASTM Specification
1	Cover Gland
2	Valve Body
3	Poppet
4	Spring

Dimensions



Ordering Number	Connection Type	Orifice, in.(mm)	Cv	A	B	C	D	E
15CV-LPF2-B-	LPF2	0.094 (2.39)	0.15	2.25 (57.15)	1.88 (47.75)	0.31 (7.87)	0.38 (9.6)	0.63 (15.88)
15CV-LPF4-B-	LPF4	0.188 (4.78)	0.63	3.18 (80.77)	2.56 (65.02)	0.44 (11.18)	0.63 (15.88)	0.81 (20.64)
15CV-LPF6-B-	LPF6	0.250 (6.35)	1.70	3.56 (90.42)	3.00 (76.20)	0.53 (13.46)	0.75 (19.05)	1.00 (25.40)

❖ All dimensions for reference only and subject to change.



Ordering Number	Connection Type	Orifice, in.(mm)	Cv	A	B	C	D
15CV-FNPT4-B-	FNPT4	0.12 (3.05)	0.28	3.37 (85.60)	2.38 (60.33)	0.81 (20.57)	0.81 (20.57)
15CV-FNPT6-B-	FNPT6	0.22 (5.59)	0.84	3.95 (100.33)	2.88 (73.15)	1.00 (25.4)	1.00 (25.4)
15CV-FNPT8-B-	FNPT8	0.36 (9.14)	2.30	5.36 (136.14)	3.88 (98.55)	1.19 (30.23)	1.38 (35.05)

❖ All dimensions for reference only and subject to change.

How to Order

15CV — LPF4 — B — Z — 316

Series	Connector Sizes	Seal Type	Seal material	Body Material
15CV	LPF2 1/8" Tubing	V Blunt	Fluorocarbon FKM	316 316 S.S.
	LPF4 1/4" Tubing	B Ball	BN Buna N	316L 316L S.S.
	LPF6 3/8" Tubing		E Ethylene Propylene	
	FNPT4 1/4" NPT(Female)		N Neoprene	
	FNPT6 3/8" NPT(Female)		Z Kalrez	
	FNPT8 1/2" NPT(Female)			

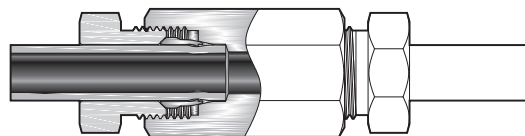
Single Ferrule Compression Fittings

15 Series

Features

- ❖ Single-ferrule compression sleeve connections for up to 15,000 psig MAWP
- ❖ Operating temperature from -100°F(-73°C) to 650°F(343°C)
- ❖ Fittings are easy to disconnect and retighten
- ❖ Available sizes are 1/8", 1/4", 3/8", and 1/2"
- ❖ Molybdenum disulfide-coated gland nuts to prevent galling

Fluidline 15 series tube fittings are designed for use with Fluidline 15 series valves



Materials Standards

Component	Material	Standard
Body, Ferrule Sleeve	316 Stainless Steel	ASTM A479
Gland		

Fluidline 15 Series Tube Fittings and Tubing can be made with materials suitable for sour gas service are available, materials are selected in accordance with NACE MR0175/ISO 15156

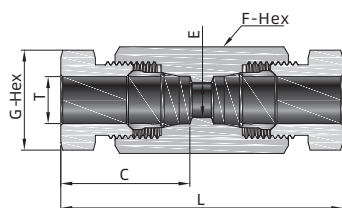
Working Pressure

- ❖ The maximum working pressure of the 15 series tube fittings at ambient temperature is determined by the maximum working pressure of the tubing that is used, refer to 15 series tubing data

Dimensions

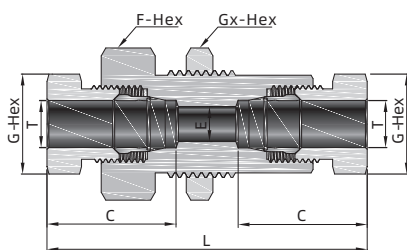
- ❖ All dimensions for reference only and subject to change

Unions



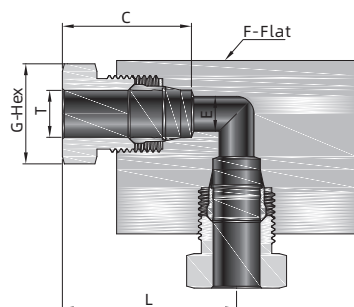
T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)				
		L	C	E	F	G
1/8	15U-LPF2-	2.13(54.2)	0.91(23.1)	0.09(2.4)	0.50(12.7)	0.37(9.5)
1/4	15U-LPF4-	2.67(67.8)	1.21(30.8)	0.19(4.8)	0.63(15.9)	0.63(15.9)
3/8	15U-LPF6-	2.82(71.7)	1.29(32.7)	0.25(6.4)	0.75(19.1)	0.75(19.1)
1/2	15U-LPF8-	3.20(81.4)	1.38(35.1)	0.31(7.9)	1.00(25.4)	0.94(23.8)

Bulkhead Unions



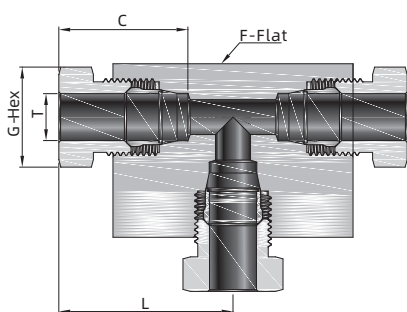
T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)						Panel Hole Size	Maximum Panel Thickness
		L	C	E	F	G	GX		
1/8	15BU-LPF2-	2.64(67.0)	0.91(23.1)	0.09(2.4)	0.75(19.1)	0.37(9.5)	0.81(20.6)	0.69(17.5)	0.38(9.7)
1/4	15BU-LPF4-	2.93(74.3)	1.21(30.8)	0.19(4.8)	1.00(25.4)	0.63(15.9)	1.00(25.4)	0.94(23.9)	0.38(9.7)
3/8	15BU-LPF6-	2.95(74.9)	1.29(32.7)	0.25(6.4)	1.00(25.4)	0.75(19.1)	1.06(27.0)	0.94(23.9)	0.38(9.7)
1/2	15BU-LPF8-	3.58(90.9)	1.38(35.1)	0.31(7.9)	1.38(34.9)	0.94(23.8)	1.38(34.9)	1.13(28.6)	0.38(9.7)

Unions Elbows



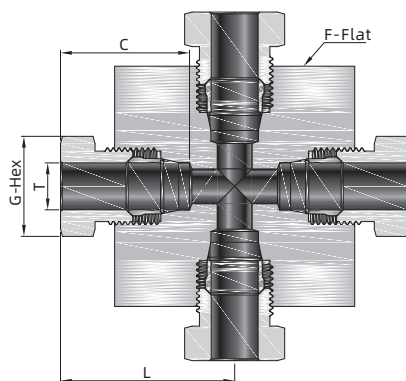
T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)				
		L	C	E	F	G
1/8	15UE-LPF2-	1.13(28.7)	0.91(23.1)	0.09(2.4)	0.63(15.9)	0.37(9.5)
1/4	15UE-LPF4-	1.52(38.7)	1.21(30.8)	0.19(4.8)	0.75(19.1)	0.63(15.9)
3/8	15UE-LPF6-	1.54(39.0)	1.29(32.7)	0.25(6.4)	0.75(19.1)	0.75(19.1)
1/2	15UE-LPF8-	1.85(47.1)	1.38(35.1)	0.31(7.9)	1.00(25.4)	0.94(23.8)

Unions Tees



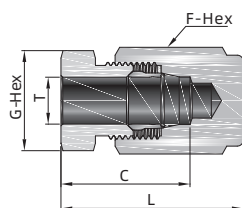
T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)				
		L	C	E	F	G
1/8	15UT-LPF2-	1.19(30.3)	0.91(23.1)	0.09(2.4)	0.63(15.9)	0.37(9.5)
1/4	15UT-LPF4-	1.52(38.7)	1.21(30.8)	0.19(4.8)	0.75(19.1)	0.63(15.9)
3/8	15UT-LPF6-	1.54(39.0)	1.29(32.7)	0.25(6.4)	0.75(19.1)	0.75(19.1)
1/2	15UT-LPF8-	1.85(47.1)	1.38(35.1)	0.31(7.9)	1.00(25.4)	0.94(23.8)

Unions Crosses



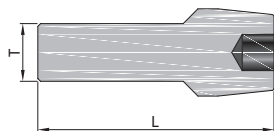
T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)				
		L	C	E	F	G
1/8	15UC-LPF2-	1.19(30.3)	0.91(23.1)	0.09(2.4)	0.63(15.9)	0.37(9.5)
1/4	15UC-LPF4-	1.52(38.7)	1.21(30.8)	0.19(4.8)	0.75(19.1)	0.63(15.9)
3/8	15UC-LPF6-	1.54(39.0)	1.29(32.7)	0.25(6.4)	0.75(19.1)	0.75(19.1)
1/2	15UC-LPF8-	1.85(47.1)	1.38(35.1)	0.31(7.9)	1.00(25.4)	0.94(23.8)

Caps



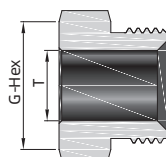
T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)			
		L	C	F	G
1/8	15CA-LPF2-	1.06(27.1)	0.91(23.1)	0.50(12.7)	0.37(9.5)
1/4	15CA-LPF4-	1.52(38.7)	1.21(30.8)	0.63(15.9)	0.63(15.9)
3/8	15CA-LPF6-	1.63(41.4)	1.29(32.7)	0.75(19.1)	0.75(19.1)
1/2	15CA-LPF8-	1.85(47.1)	1.38(35.1)	1.00(25.4)	0.94(23.8)

Plugs



T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)
		L
1/8	15P-LPF2-	0.80(20.2)
1/4	15P-LPF4-	1.02(26.0)
3/8	15P-LPF6-	1.06(26.9)
1/2	15P-LPF8-	1.19(30.1)

Glands



T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)
		G
1/8	15G-LPF2-	0.37(9.5)
1/4	15G-LPF4-	0.63(15.9)
3/8	15G-LPF6-	0.75(19.1)
1/2	15G-LPF8-	0.94(23.8)

Ferrules Sleeves



T-Tube O.D. in.	Basic Ordering Number
1/8	15C-LPF2-
1/4	15C-LPF4-
3/8	15C-LPF6-
1/2	15C-LPF8-

How to Order

15U



LPF4

— 316

Fitting Type	Port1/2/3/4 Type	Port1/2/3/4 Size	Body Material
15U Unions	LPF Low Pressure Female	2 1/8 in.	316 316 S.S.
15BU Bulkhead Unions		4 1/4 in.	316L 316L S.S.
15UE Unions Elbows		6 3/8 in.	
15UT Unions Tees		8 1/2 in.	
15UC Unions Crosses			
15CA Caps			
15P Plugs			
15G Nuts			
15C Ferrules			

Tubing

15 Series

Features

- ❖ 316 and 316L Stainless Steel(Annealed) to commercial OD sizing tolerances
- ❖ Working pressure up to 15000 psig(1034 bar)

Material Standards and Mechanical Properties

Fluidline 15 series tube fittings used with heavy-wall annealed stainless steel tubing

Grade	UNS	Specification
316/316L	S31600/S31603	ASTM A213,A269
		ASME SA213

Working Pressure

- ❖ The allowable working pressure in the table below are based on ASME B31.3 at -100°F(-73°C) to 100°F(37.8°C)

T-Tube O.D. in.	Wall Thickness in.	Working Pressure psig(bar)
1/8	0.037	15000(1034)
1/4	0.083	15000(1034)
3/8	0.118	15000(1034)
1/2	0.118	10000(689)

How to Order

15FT — 4 — 0.083 — 6M — TP316				
Tubing Type	Tubing O.D. (in.)	Wall Thickness (in.)	Nominal Length (m/feet)	Material Grade
15FT 15 Series Fractional Tubing	2 1/8 in.	0.037	1M 1 meter	TP316
	4 1/4 in.	0.083	2M 2 meter	TP316L
	6 3/8 in.	0.118	3M 3 meter	
	8 1/2 in.	0.118	4M 4 meter	
			5M 5 meter	
			6M 6 meter	
			10F 10 feet	
			20F 20 feet	

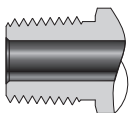
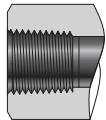
Pipe Connection Fittings

P Series

Features

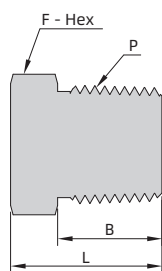
- ❖ Available sizes are 1/8, 1/4, 3/8, 1/2, 3/4 and 1
- ❖ Working temperature from -65°F to 1000°F (-53°C to 537°C)
- ❖ Special 316 stainless steel and Alloy 825 material

End Connection Configuration, Size and Working Pressure

End Connection	Configuration	Size	Working Pressure psig(bar)
Male NPT, BSPT Thread		1/4": NPT4, MBT4 3/8": NPT6, MBT6 1/2": NPT8, MBT8	15,000(1,034)
		3/4": NPT12, MBT12 1": NPT16, MBT16	10,000(689)
Female NPT, BSPT Thread		1/4": FNPT4, FBT4 3/8": FNPT6, FBT6 1/2": FNPT8, FBT8	15,000(1,034)
		3/4": FNPT12, FBT12 1": FNPT16, FBT12	10,000(689)

Dimensions

Pipe Plugs



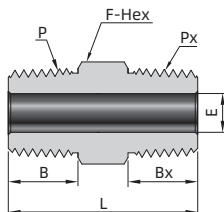
Male NPT Threads

P-NPT Size	Ordering Number	Dimension, in.(mm)		
		L	F	B
1/8	HTP-NPT2-	0.63(16.0)	0.44(11.1)	0.38(9.7)
1/4	HTP-NPT4-	0.87(22.2)	0.56(14.3)	0.56(14.2)
3/8	HTP-NPT6-	0.93(23.6)	0.69(17.5)	0.56(14.2)
1/2	HTP-NPT8-	1.16(29.5)	0.87(22.2)	0.75(19.1)
3/4	HTP-NPT12-	1.25(31.8)	1.06(27.0)	0.75(19.1)
1	HTP-NPT16-	1.55(39.3)	1.37(34.9)	0.94(23.9)

Male BSPT Tapered Threads

P-BSPT Size	Ordering Number	Dimension, in.(mm)		
		L	F	B
1/8	HTP-MBT2-	0.63(16.0)	0.44(11.1)	0.38(9.7)
1/4	HTP-MBT4-	0.87(22.2)	0.56(14.3)	0.56(14.2)
3/8	HTP-MBT6-	0.93(23.6)	0.69(17.5)	0.56(14.2)
1/2	HTP-MBT8-	1.16(29.5)	0.87(22.2)	0.75(19.1)
3/4	HTP-MBT12-	1.25(31.8)	1.06(27.0)	0.75(19.1)
1	HTP-MBT16-	1.55(39.3)	1.37(34.9)	0.94(23.9)

Hex Nipples



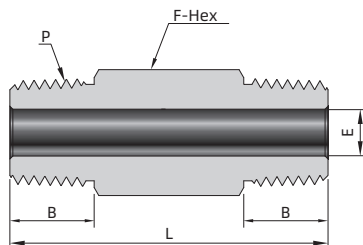
Male NPT Threads

P-NPT Size	Px-NPT Size	Ordering Number	Dimension, in.(mm)				
			L	F	B	Bx	E
1/8	1/8	NPT2-HTHN-NPT2-	1.05(26.6)	0.44(11.1)	0.38(9.7)	0.38(9.7)	0.19(4.8)
1/4	1/8	NPT4-HTHN-NPT2-	1.30(32.9)	0.56(14.3)	0.56(14.2)	0.38(9.7)	0.19(4.8)
1/4	1/4	NPT4-HTHN-NPT4-	1.47(37.4)	0.56(14.3)	0.56(14.2)	0.56(14.2)	0.25(6.4)
3/8	1/8	NPT6-HTHN-NPT2-	1.34(34.1)	0.69(17.5)	0.56(14.2)	0.38(9.7)	0.19(4.8)
3/8	1/4	NPT6-HTHN-NPT4-	1.52(38.6)	0.69(17.5)	0.56(14.2)	0.56(14.2)	0.25(6.4)
3/8	3/8	NPT6-HTHN-NPT6-	1.52(38.6)	0.69(17.5)	0.56(14.2)	0.56(14.2)	0.31(7.9)
1/2	1/8	NPT8-HTHN-NPT2-	1.58(40.2)	0.87(22.2)	0.75(19.1)	0.38(9.7)	0.19(4.8)
1/2	1/4	NPT8-HTHN-NPT4-	1.76(44.7)	0.87(22.2)	0.75(19.1)	0.56(14.2)	0.25(6.4)
1/2	3/8	NPT8-HTHN-NPT6-	1.76(44.7)	0.87(22.2)	0.75(19.1)	0.56(14.2)	0.31(7.9)
1/2	1/2	NPT8-HTHN-NPT8-	1.95(49.6)	0.87(22.2)	0.75(19.1)	0.75(19.1)	0.38(9.6)
3/4	1/8	NPT12-HTHN-NPT2-	1.67(42.4)	1.06(27.0)	0.75(19.1)	0.38(9.7)	0.22(5.5)
3/4	1/4	NPT12-HTHN-NPT4-	1.85(46.9)	1.06(27.0)	0.75(19.1)	0.56(14.2)	0.28(7.1)
3/4	3/8	NPT12-HTHN-NPT6-	1.85(46.9)	1.06(27.0)	0.75(19.1)	0.56(14.2)	0.38(9.6)
3/4	1/2	NPT12-HTHN-NPT8-	2.04(51.8)	1.06(27.0)	0.75(19.1)	0.75(19.1)	0.47(11.9)
3/4	3/4	NPT12-HTHN-NPT12-	2.04(51.8)	1.06(27.0)	0.75(19.1)	0.75(19.1)	0.58(14.8)
1	1/8	NPT16-HTHN-NPT2-	1.96(49.8)	1.37(34.9)	0.94(23.9)	0.38(9.7)	0.22(5.5)
1	1/4	NPT16-HTHN-NPT4-	2.14(54.3)	1.37(34.9)	0.94(23.9)	0.56(14.2)	0.28(7.1)
1	3/8	NPT16-HTHN-NPT6-	2.14(54.3)	1.37(34.9)	0.94(23.9)	0.56(14.2)	0.38(9.6)
1	1/2	NPT16-HTHN-NPT8-	2.33(59.2)	1.37(34.9)	0.94(23.9)	0.75(19.1)	0.47(11.9)
1	3/4	NPT16-HTHN-NPT12-	2.33(59.2)	1.37(34.9)	0.94(23.9)	0.75(19.1)	0.58(14.8)
1	1	NPT16-HTHN-NPT16-	2.52(64.0)	1.37(34.9)	0.94(23.9)	0.94(23.9)	0.79(20.0)

Male BSPT Tapered Threads

P-BSPT Size	Px-BSPT Size	Ordering Number	Dimension, in.(mm)				
			L	F	B	Bx	E
1/8	1/8	MBT2-HTHN-MBT2-	1.05(26.6)	0.44(11.1)	0.38(9.7)	0.38(9.7)	0.19(4.8)
1/4	1/8	MBT4-HTHN-MBT2-	1.30(32.9)	0.56(14.3)	0.56(14.2)	0.38(9.7)	0.19(4.8)
1/4	1/4	MBT4-HTHN-MBT4-	1.47(37.4)	0.56(14.3)	0.56(14.2)	0.56(14.2)	0.25(6.4)
3/8	1/8	MBT6-HTHN-MBT2-	1.34(34.1)	0.69(17.5)	0.56(14.2)	0.38(9.7)	0.19(4.8)
3/8	1/4	MBT6-HTHN-MBT4-	1.52(38.6)	0.69(17.5)	0.56(14.2)	0.56(14.2)	0.25(6.4)
3/8	3/8	MBT6-HTHN-MBT6-	1.52(38.6)	0.69(17.5)	0.56(14.2)	0.56(14.2)	0.31(7.9)
1/2	1/8	MBT8-HTHN-MBT2-	1.58(40.2)	0.87(22.2)	0.75(19.1)	0.38(9.7)	0.19(4.8)
1/2	1/4	MBT8-HTHN-MBT4-	1.76(44.7)	0.87(22.2)	0.75(19.1)	0.56(14.2)	0.25(6.4)
1/2	3/8	MBT8-HTHN-MBT6-	1.76(44.7)	0.87(22.2)	0.75(19.1)	0.56(14.2)	0.31(7.9)
1/2	1/2	MBT8-HTHN-MBT8-	1.95(49.6)	0.87(22.2)	0.75(19.1)	0.75(19.1)	0.38(9.6)
3/4	1/8	MBT12-HTHN-MBT2-	1.67(42.4)	1.06(27.0)	0.75(19.1)	0.38(9.7)	0.22(5.5)
3/4	1/4	MBT12-HTHN-MBT4-	1.85(46.9)	1.06(27.0)	0.75(19.1)	0.56(14.2)	0.28(7.1)
3/4	3/8	MBT12-HTHN-MBT6-	1.85(46.9)	1.06(27.0)	0.75(19.1)	0.56(14.2)	0.38(9.6)
3/4	1/2	MBT12-HTHN-MBT8-	2.04(51.8)	1.06(27.0)	0.75(19.1)	0.75(19.1)	0.47(11.9)
3/4	3/4	MBT12-HTHN-MBT12-	2.04(51.8)	1.06(27.0)	0.75(19.1)	0.75(19.1)	0.58(14.8)
1	1/8	MBT16-HTHN-MBT2-	1.96(49.8)	1.37(34.9)	0.94(23.9)	0.38(9.7)	0.22(5.5)
1	1/4	MBT16-HTHN-MBT4-	2.14(54.3)	1.37(34.9)	0.94(23.9)	0.56(14.2)	0.28(7.1)
1	3/8	MBT16-HTHN-MBT6-	2.14(54.3)	1.37(34.9)	0.94(23.9)	0.56(14.2)	0.38(9.6)
1	1/2	MBT16-HTHN-MBT8-	2.33(59.2)	1.37(34.9)	0.94(23.9)	0.75(19.1)	0.47(11.9)
1	3/4	MBT16-HTHN-MBT12-	2.33(59.2)	1.37(34.9)	0.94(23.9)	0.75(19.1)	0.58(14.8)
1	1	MBT16-HTHN-MBT16-	2.52(64.0)	1.37(34.9)	0.94(23.9)	0.94(23.9)	0.79(20.0)

Hex Long Nipples



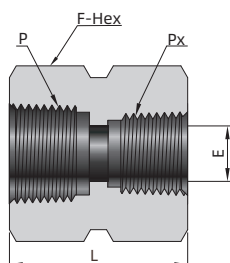
Male NPT Threads

P-NPT Size	Ordering Number	Dimension, in.(mm)			
		L	F	B	E
1/8	NPT2-HTLN-NPT2-1.5-	1.50(38.1)	0.44(11.1)	0.38(9.7)	0.19(4.8)
1/8	NPT2-HTLN-NPT2-2-	2.00(50.8)	0.44(11.1)	0.38(9.7)	0.19(4.8)
1/8	NPT2-HTLN-NPT2-2.5-	2.50(63.5)	0.44(11.1)	0.38(9.7)	0.19(4.8)
1/8	NPT2-HTLN-NPT2-3-	3.00(76.2)	0.44(11.1)	0.38(9.7)	0.19(4.8)
1/4	NPT4-HTLN-NPT4-2-	2.00(50.8)	0.56(14.3)	0.56(14.3)	0.25(6.4)
1/4	NPT4-HTLN-NPT4-2.5-	2.50(63.5)	0.56(14.3)	0.56(14.3)	0.25(6.4)
1/4	NPT4-HTLN-NPT4-3-	3.00(76.2)	0.56(14.3)	0.56(14.3)	0.25(6.4)
1/4	NPT4-HTLN-NPT4-4-	4.00(101.6)	0.56(14.3)	0.56(14.3)	0.25(6.4)
3/8	NPT6-HTLN-NPT6-2-	2.00(50.8)	0.69(17.5)	0.56(14.3)	0.31(7.9)
3/8	NPT6-HTLN-NPT6-2.5-	2.50(63.5)	0.69(17.5)	0.56(14.3)	0.31(7.9)
3/8	NPT6-HTLN-NPT6-3-	3.00(76.2)	0.69(17.5)	0.56(14.3)	0.31(7.9)
3/8	NPT6-HTLN-NPT6-4-	4.00(101.6)	0.69(17.5)	0.56(14.3)	0.31(7.9)
1/2	NPT8-HTLN-NPT8-3-	3.00(76.2)	0.87(22.2)	0.75(19.1)	0.38(9.6)
1/2	NPT8-HTLN-NPT8-4-	4.00(101.6)	0.87(22.2)	0.75(19.1)	0.38(9.6)
1/2	NPT8-HTLN-NPT8-6-	6.00(152.4)	0.87(22.2)	0.75(19.1)	0.38(9.6)
3/4	NPT12-HTLN-NPT12-3-	3.00(76.2)	1.06(27.0)	0.75(19.1)	0.58(14.8)
3/4	NPT12-HTLN-NPT12-4-	4.00(101.6)	1.06(27.0)	0.75(19.1)	0.58(14.8)
1	NPT16-HTLN-NPT16-3-	3.00(76.2)	1.37(34.9)	0.94(23.9)	0.79(20.0)
1	NPT16-HTLN-NPT16-4-	4.00(101.6)	1.37(34.9)	0.94(23.9)	0.79(20.0)

Male ISO Tapered Threads

P-BSPT Size	Ordering Number	Dimension, in.(mm)			
		L	F	B	E
1/8	MBT2-HTLN-MBT2-1.5-	1.50(38.1)	0.44(11.1)	0.38(9.7)	0.19(4.8)
1/8	MBT2-HTLN-MBT2-2-	2.00(50.8)	0.44(11.1)	0.38(9.7)	0.19(4.8)
1/8	MBT2-HTLN-MBT2-2.5-	2.50(63.5)	0.44(11.1)	0.38(9.7)	0.19(4.8)
1/8	MBT2-HTLN-MBT2-3-	3.00(76.2)	0.44(11.1)	0.38(9.7)	0.19(4.8)
1/4	MBT4-HTLN-MBT4-2-	2.00(50.8)	0.56(14.3)	0.56(14.2)	0.25(6.4)
1/4	MBT4-HTLN-MBT4-2.5-	2.50(63.5)	0.56(14.3)	0.56(14.2)	0.25(6.4)
1/4	MBT4-HTLN-MBT4-3-	3.00(76.2)	0.56(14.3)	0.56(14.2)	0.25(6.4)
1/4	MBT4-HTLN-MBT4-4-	4.00(101.6)	0.56(14.3)	0.56(14.2)	0.25(6.4)
3/8	MBT6-HTLN-MBT6-2-	2.00(50.8)	0.69(17.5)	0.56(14.2)	0.31(7.9)
3/8	MBT6-HTLN-MBT6-2.5-	2.50(63.5)	0.69(17.5)	0.56(14.2)	0.31(7.9)
3/8	MBT6-HTLN-MBT6-3-	3.00(76.2)	0.69(17.5)	0.56(14.2)	0.31(7.9)
3/8	MBT6-HTLN-MBT6-4-	4.00(101.6)	0.69(17.5)	0.56(14.2)	0.31(7.9)
1/2	MBT8-HTLN-MBT8-3-	3.00(76.2)	0.87(22.2)	0.75(19.1)	0.38(9.6)
1/2	MBT8-HTLN-MBT8-4-	4.00(101.6)	0.87(22.2)	0.75(19.1)	0.38(9.6)
1/2	MBT8-HTLN-MBT8-6-	6.00(152.4)	0.87(22.2)	0.75(19.1)	0.38(9.6)
3/4	MBT12-HTLN-MBT12-3-	3.00(76.2)	1.06(27.0)	0.75(19.1)	0.58(14.8)
3/4	MBT12-HTLN-MBT12-4-	4.00(101.6)	1.06(27.0)	0.75(19.1)	0.58(14.8)
1	MBT16-HTLN-MBT16-3-	3.00(76.2)	1.37(34.9)	0.94(23.9)	0.79(20.0)
1	MBT16-HTLN-MBT16-4-	4.00(101.6)	1.37(34.9)	0.94(23.9)	0.79(20.0)

Hex Couplings



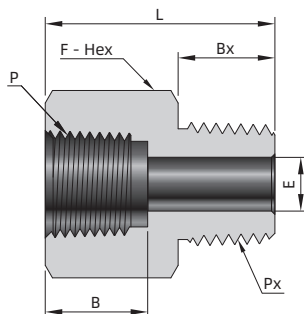
Female NPT Threads

P-NPT Size	Px-NPT Size	Ordering Number	Dimension, in.(mm)		
			L	F	E
1/8	1/8	FNPT2-HTHC-FNPT2-	0.94(23.8)	0.63(15.9)	0.31(8.0)
1/4	1/8	FNPT4-HTHC-FNPT2-	1.14(28.9)	0.94(23.8)	0.31(8.0)
1/4	1/4	FNPT4-HTHC-FNPT4-	1.32(33.5)	0.94(23.8)	0.41(10.4)
3/8	1/8	FNPT6-HTHC-FNPT2-	1.14(28.9)	1.13(28.6)	0.31(8.0)
3/8	1/4	FNPT6-HTHC-FNPT4-	1.32(33.5)	1.13(28.6)	0.41(10.4)
3/8	3/8	FNPT6-HTHC-FNPT6-	1.32(33.5)	1.13(28.6)	0.54(13.8)
1/2	1/8	FNPT8-HTHC-FNPT2-	1.35(34.2)	1.37(34.9)	0.31(8.0)
1/2	1/4	FNPT8-HTHC-FNPT4-	1.53(38.8)	1.37(34.9)	0.41(10.4)
1/2	3/8	FNPT8-HTHC-FNPT6-	1.53(38.8)	1.37(34.9)	0.54(13.8)
1/2	1/2	FNPT8-HTHC-FNPT8-	1.72(43.8)	1.37(34.9)	0.67(17.0)
3/4	1/8	FNPT12-HTHC-FNPT2-	1.40(35.5)	1.50(38.1)	0.31(8.0)
3/4	1/4	FNPT12-HTHC-FNPT4-	1.58(40.1)	1.50(38.1)	0.41(10.4)
3/4	3/8	FNPT12-HTHC-FNPT6-	1.58(40.1)	1.50(38.1)	0.54(13.8)
3/4	1/2	FNPT12-HTHC-FNPT8-	1.79(45.4)	1.50(38.1)	0.67(17.0)
3/4	3/4	FNPT12-HTHC-FNPT12-	1.84(46.7)	1.50(38.1)	0.88(22.3)
1	1/8	FNPT16-HTHC-FNPT2-	1.59(40.5)	1.75(44.5)	0.31(8.0)
1	1/4	FNPT16-HTHC-FNPT4-	1.76(44.8)	1.75(44.5)	0.41(10.4)
1	3/8	FNPT16-HTHC-FNPT6-	1.76(44.8)	1.75(44.5)	0.54(13.8)
1	1/2	FNPT16-HTHC-FNPT8-	1.96(49.7)	1.75(44.5)	0.67(17.0)
1	3/4	FNPT16-HTHC-FNPT12-	2.00(50.7)	1.75(44.5)	0.88(22.3)
1	1	FNPT16-HTHC-FNPT16-	2.19(55.5)	1.75(44.5)	1.11(28.1)

Female BSPT Tapered Threads

P-BSPT Size	Px-BSPT Size	Ordering Number	Dimension, in.(mm)		
			L	F	E
1/8	1/8	FBT2-HTHC-FBT2-	0.94(23.8)	0.63(15.9)	0.31(8.0)
1/4	1/8	FBT4-HTHC-FBT2-	1.14(28.9)	0.94(23.8)	0.31(8.0)
1/4	1/4	FBT4-HTHC-FBT4-	1.32(33.5)	0.94(23.8)	0.41(10.4)
3/8	1/8	FBT6-HTHC-FBT2-	1.14(28.9)	1.13(28.6)	0.31(8.0)
3/8	1/4	FBT6-HTHC-FBT4-	1.32(33.5)	1.13(28.6)	0.41(10.4)
3/8	3/8	FBT6-HTHC-FBT6-	1.32(33.5)	1.13(28.6)	0.54(13.8)
1/2	1/8	FBT8-HTHC-FBT2-	1.35(34.2)	1.37(34.9)	0.31(8.0)
1/2	1/4	FBT8-HTHC-FBT4-	1.53(38.8)	1.37(34.9)	0.41(10.4)
1/2	3/8	FBT8-HTHC-FBT6-	1.53(38.8)	1.37(34.9)	0.54(13.8)
1/2	1/2	FBT8-HTHC-FBT8-	1.72(43.8)	1.37(34.9)	0.67(17.0)
3/4	1/8	FBT12-HTHC-FBT2-	1.40(35.5)	1.50(38.1)	0.31(8.0)
3/4	1/4	FBT12-HTHC-FBT4-	1.58(40.1)	1.50(38.1)	0.41(10.4)
3/4	3/8	FBT12-HTHC-FBT6-	1.58(40.1)	1.50(38.1)	0.54(13.8)
3/4	1/2	FBT12-HTHC-FBT8-	1.79(45.4)	1.50(38.1)	0.67(17.0)
3/4	3/4	FBT12-HTHC-FBT12-	1.84(46.7)	1.50(38.1)	0.88(22.3)
1	1/8	FBT16-HTHC-FBT2-	1.59(40.5)	1.75(44.5)	0.31(8.0)
1	1/4	FBT16-HTHC-FBT4-	1.76(44.8)	1.75(44.5)	0.41(10.4)
1	3/8	FBT16-HTHC-FBT6-	1.76(44.8)	1.75(44.5)	0.54(13.8)
1	1/2	FBT16-HTHC-FBT8-	1.96(49.7)	1.75(44.5)	0.67(17.0)
1	3/4	FBT16-HTHC-FBT12-	2.00(50.7)	1.75(44.5)	0.88(22.3)
1	1	FBT16-HTHC-FBT16-	2.19(55.5)	1.75(44.5)	1.11(28.1)

Adapters

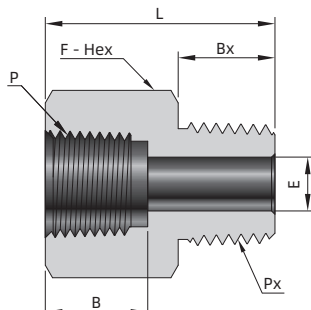


Female NPT Threads

Male NPT Threads

P-NPT Size	Px-NPT Size	Ordering Number	Dimension, in.(mm)				
			L	F	B	Bx	E
1/8	1/8	FNPT2-HTA-NPT2-	0.96(24.5)	0.63(15.9)	0.41(10.4)	0.38(9.7)	0.19(4.8)
1/8	1/4	FNPT2-HTA-NPT4-	1.13(28.8)	0.63(15.9)	0.41(10.4)	0.56(14.2)	0.25(6.4)
1/8	3/8	FNPT2-HTA-NPT6-	1.14(29.0)	0.69(17.5)	0.41(10.4)	0.56(14.2)	0.31(7.9)
1/8	1/2	FNPT2-HTA-NPT8-	1.08(27.4)	0.87(22.2)	0.41(10.4)	0.75(19.1)	0.31(8.0)
1/8	3/4	FNPT2-HTA-NPT12-	1.08(27.4)	1.06(27.0)	0.41(10.4)	0.75(19.1)	0.31(8.0)
1/4	1/8	FNPT4-HTA-NPT2-	1.25(31.8)	0.94(23.8)	0.59(15.0)	0.38(9.7)	0.19(4.8)
1/4	1/4	FNPT4-HTA-NPT4-	1.37(34.9)	0.94(23.8)	0.59(15.0)	0.56(14.2)	0.25(6.4)
1/4	3/8	FNPT4-HTA-NPT6-	1.37(34.9)	0.94(23.8)	0.59(15.0)	0.56(14.2)	0.31(7.9)
1/4	1/2	FNPT4-HTA-NPT8-	1.58(40.1)	0.94(23.8)	0.59(15.0)	0.75(19.1)	0.38(9.6)
1/4	3/4	FNPT4-HTA-NPT12-	1.34(34.1)	1.06(27.0)	0.59(15.0)	0.75(19.1)	0.41(10.4)
1/4	1	FNPT4-HTA-NPT16-	1.37(34.8)	1.37(34.9)	0.59(15.0)	0.94(23.9)	0.41(10.4)
3/8	1/4	FNPT6-HTA-NPT4-	1.42(36.0)	1.13(28.6)	0.59(15.0)	0.56(14.2)	0.25(6.4)
3/8	3/8	FNPT6-HTA-NPT6-	1.42(36.0)	1.13(28.6)	0.59(15.0)	0.56(14.2)	0.31(7.9)
3/8	1/2	FNPT6-HTA-NPT8-	1.61(41.0)	1.13(28.6)	0.59(15.0)	0.75(19.1)	0.38(9.6)
3/8	3/4	FNPT6-HTA-NPT12-	1.61(41.0)	1.06(27.0)	0.59(15.0)	0.75(19.1)	0.54(13.8)
3/8	1	FNPT6-HTA-NPT16-	1.47(37.3)	1.37(34.9)	0.59(15.0)	0.94(23.9)	0.54(13.8)
1/2	1/4	FNPT8-HTA-NPT4-	1.72(48.1)	1.37(34.9)	0.78(19.8)	0.56(14.2)	0.25(6.4)
1/2	3/8	FNPT8-HTA-NPT6-	1.72(48.1)	1.37(34.9)	0.78(19.8)	0.56(14.2)	0.31(7.9)
1/2	1/2	FNPT8-HTA-NPT8-	1.89(48.0)	1.37(34.9)	0.78(19.8)	0.75(19.1)	0.38(9.6)
1/2	3/4	FNPT8-HTA-NPT12-	1.89(48.0)	1.19(30.2)	0.78(19.8)	0.75(19.1)	0.58(14.8)
1/2	1	FNPT8-HTA-NPT16-	2.08(52.8)	1.37(34.9)	0.78(19.8)	0.94(23.9)	0.67(17.0)
3/4	1/2	FNPT12-HTA-NPT8-	1.89(48.0)	1.50(38.1)	0.81(20.6)	0.75(19.1)	0.47(11.9)
3/4	3/4	FNPT12-HTA-NPT12-	1.89(48.0)	1.50(38.1)	0.81(20.6)	0.75(19.1)	0.58(14.8)
3/4	1	FNPT12-HTA-NPT16-	2.08(52.9)	1.50(38.1)	0.81(20.6)	0.94(23.9)	0.79(20.0)
1	1/2	FNPT16-HTA-NPT8-	2.10(53.3)	1.75(44.5)	1.00(25.4)	0.75(19.1)	0.47(11.9)
1	3/4	FNPT16-HTA-NPT12-	2.10(53.3)	1.75(44.5)	1.00(25.4)	0.75(19.1)	0.58(14.8)
1	1	FNPT16-HTA-NPT16-	2.29(58.1)	1.75(44.5)	1.00(25.4)	0.94(23.9)	0.79(20.0)

Adapters

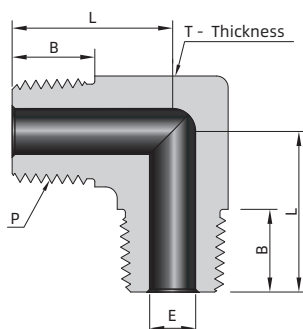


Female BSPT Tapered Threads

Male BSPT Tapered Threads

P-BSPT Size	Px-BSPT Size	Ordering Number	Dimension, in.(mm)				
			L	F	B	Bx	E
1/8	1/8	FBT2-HTA-MBT2-	0.96(24.5)	0.63(15.9)	0.41(10.4)	0.38(9.7)	0.19(4.8)
1/8	1/4	FBT2-HTA-MBT4-	1.13(28.8)	0.63(15.9)	0.41(10.4)	0.56(14.2)	0.25(6.4)
1/8	3/8	FBT2-HTA-MBT6-	1.14(29.0)	0.69(17.5)	0.41(10.4)	0.56(14.2)	0.31(7.9)
1/8	1/2	FBT2-HTA-MBT8-	1.08(27.4)	0.87(22.2)	0.41(10.4)	0.75(19.1)	0.31(8.0)
1/8	3/4	FBT2-HTA-MBT12-	1.08(27.4)	1.06(27.0)	0.41(10.4)	0.75(19.1)	0.31(8.0)
1/4	1/8	FBT4-HTA-MBT2-	1.25(31.8)	0.94(23.8)	0.59(15.0)	0.38(9.7)	0.19(4.8)
1/4	1/4	FBT4-HTA-MBT4-	1.37(34.9)	0.94(23.8)	0.59(15.0)	0.56(14.2)	0.25(6.4)
1/4	3/8	FBT4-HTA-MBT6-	1.37(34.9)	0.94(23.8)	0.59(15.0)	0.56(14.2)	0.31(7.9)
1/4	1/2	FBT4-HTA-MBT8-	1.58(40.1)	0.94(23.8)	0.59(15.0)	0.75(19.1)	0.38(9.6)
1/4	3/4	FBT4-HTA-MBT12-	1.34(34.1)	1.06(27.0)	0.59(15.0)	0.75(19.1)	0.41(10.4)
1/4	1	FBT4-HTA-MBT16-	1.37(34.8)	1.37(34.9)	0.59(15.0)	0.94(23.9)	0.41(10.4)
3/8	1/4	FBT6-HTA-MBT4-	1.42(36.0)	1.13(28.6)	0.59(15.0)	0.56(14.2)	0.25(6.4)
3/8	3/8	FBT6-HTA-MBT6-	1.42(36.0)	1.13(28.6)	0.59(15.0)	0.56(14.2)	0.31(7.9)
3/8	1/2	FBT6-HTA-MBT8-	1.61(41.0)	1.13(28.6)	0.59(15.0)	0.75(19.1)	0.38(9.6)
3/8	3/4	FBT6-HTA-MBT12-	1.61(41.0)	1.06(27.0)	0.59(15.0)	0.75(19.1)	0.54(13.8)
3/8	1	FBT6-HTA-MBT16-	1.47(37.3)	1.37(34.9)	0.59(15.0)	0.94(23.9)	0.54(13.8)
1/2	1/4	FBT8-HTA-MBT4-	1.72(48.1)	1.37(34.9)	0.78(19.8)	0.56(14.2)	0.25(6.4)
1/2	3/8	FBT8-HTA-MBT6-	1.72(48.1)	1.37(34.9)	0.78(19.8)	0.56(14.2)	0.31(7.9)
1/2	1/2	FBT8-HTA-MBT8-	1.89(48.0)	1.37(34.9)	0.78(19.8)	0.75(19.1)	0.38(9.6)
1/2	3/4	FBT8-HTA-MBT12-	1.89(48.0)	1.19(30.2)	0.78(19.8)	0.75(19.1)	0.58(14.8)
1/2	1	FBT8-HTA-MBT16-	2.08(52.8)	1.37(34.9)	0.78(19.8)	0.94(23.9)	0.67(17.0)
3/4	1/2	FBT12-HTA-MBT8-	1.89(48.0)	1.50(38.1)	0.81(20.6)	0.75(19.1)	0.47(11.9)
3/4	3/4	FBT12-HTA-MBT12-	1.89(48.0)	1.50(38.1)	0.81(20.6)	0.75(19.1)	0.58(14.8)
3/4	1	FBT12-HTA-MBT16-	2.08(52.9)	1.50(38.1)	0.81(20.6)	0.94(23.9)	0.79(20.0)
1	1/2	FBT16-HTA-MBT8-	2.10(53.3)	1.75(44.5)	1.00(25.4)	0.75(19.1)	0.47(11.9)
1	3/4	FBT16-HTA-MBT12-	2.10(53.3)	1.75(44.5)	1.00(25.4)	0.75(19.1)	0.58(14.8)
1	1	FBT16-HTA-MBT16-	2.29(58.1)	1.75(44.5)	1.00(25.4)	0.94(23.9)	0.79(20.0)

Male Elbows



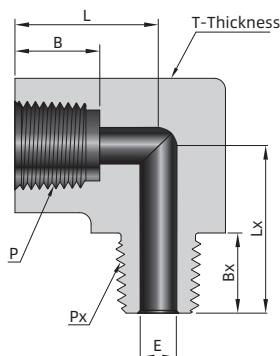
Male NPT Threads

P-NPT Size	Ordering Number	Dimension, in.(mm)			
		L	B	E	T
1/8	NPT2-HTME-NPT2-	0.75(19.1)	0.38(9.7)	0.19(4.8)	0.50(12.7)
1/4	NPT4-HTME-NPT4-	1.00(25.4)	0.56(14.2)	0.25(6.4)	0.63(15.9)
3/8	NPT6-HTME-NPT6-	1.10(28.0)	0.56(14.2)	0.31(7.9)	0.75(19.1)
1/2	NPT8-HTME-NPT8-	1.44(36.6)	0.75(19.1)	0.38(9.6)	1.00(25.4)
3/4	NPT12-HTME-NPT12-	1.56(39.6)	0.75(19.1)	0.58(14.8)	1.37(34.9)
1	NPT16-HTME-NPT16-	1.89(48.0)	0.94(23.9)	0.79(20.0)	1.50(38.1)

Male BSPT Tapered Pipe Threads

P-BSPT Size	Ordering Number	Dimension, in.(mm)			
		L	B	E	T
1/8	MBT2-HTME-MBT2-	0.75(19.1)	0.38(9.7)	0.19(4.8)	0.50(12.7)
1/4	MBT4-HTME-MBT4-	1.00(25.4)	0.56(14.2)	0.25(6.4)	0.63(15.9)
3/8	MBT6-HTME-MBT6-	1.10(28.0)	0.56(14.2)	0.31(7.9)	0.75(19.1)
1/2	MBT8-HTME-MBT8-	1.44(36.6)	0.75(19.1)	0.38(9.6)	1.00(25.4)
3/4	MBT12-HTME-MBT12-	1.56(39.6)	0.75(19.1)	0.58(14.8)	1.37(34.9)
1	MBT16-HTME-MBT16-	1.89(48.0)	0.94(23.9)	0.79(20.0)	1.50(38.1)

Street Elbows



Female NPT Threads

Male NPT Threads

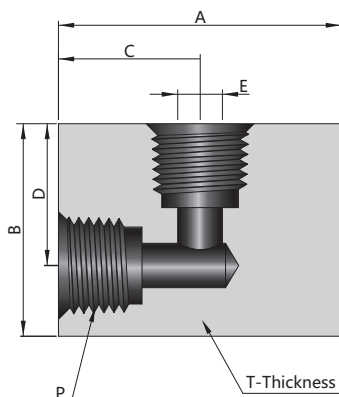
P-NPT Size	Px-NPT Size	Ordering Number	Dimension, in.(mm)					
			L	B	E	Lx	Bx	T
1/8	1/8	FNPT2-HTSE-NPT2-	0.75(19.1)	0.41(10.4)	0.19(4.8)	0.75(19.1)	0.38(9.7)	0.63(15.9)
1/8	1/4	FNPT2-HTSE-NPT4-	0.78(19.8)	0.41(10.4)	0.25(6.4)	1.00(25.4)	0.56(14.2)	0.63(15.9)
1/8	3/8	FNPT2-HTSE-NPT6-	0.95(24.2)	0.41(10.4)	0.31(7.9)	1.07(27.2)	0.56(14.2)	0.75(19.1)
1/4	1/4	FNPT4-HTSE-NPT4-	1.00(25.4)	0.59(15.0)	0.25(6.4)	1.06(27.0)	0.56(14.2)	0.75(19.1)
1/4	3/8	FNPT4-HTSE-NPT6-	1.00(25.4)	0.59(15.0)	0.31(7.9)	1.06(27.0)	0.56(14.2)	0.75(19.1)
1/4	1/2	FNPT4-HTSE-NPT8-	1.15(29.1)	0.59(15.0)	0.38(9.6)	1.40(35.5)	0.75(19.1)	1.00(25.4)
3/8	3/8	FNPT6-HTSE-NPT6-	1.20(30.6)	0.59(15.0)	0.31(7.9)	1.20(30.6)	0.56(14.2)	1.00(25.4)
3/8	1/2	FNPT6-HTSE-NPT8-	1.20(30.6)	0.59(15.0)	0.38(9.6)	1.38(35.0)	0.75(19.1)	1.00(25.4)
3/8	3/4	FNPT6-HTSE-NPT12-	1.23(31.2)	0.59(15.0)	0.54(13.8)	1.56(39.6)	0.75(19.1)	1.37(34.9)
1/2	1/2	FNPT8-HTSE-NPT8-	1.50(38.1)	0.78(19.8)	0.38(9.6)	1.61(40.8)	0.75(19.1)	1.37(34.9)
1/2	3/4	FNPT8-HTSE-NPT12-	1.43(36.2)	0.78(19.8)	0.58(14.8)	1.61(40.8)	0.75(19.1)	1.37(34.9)
1/2	1	FNPT8-HTSE-NPT16-	1.45(36.9)	0.78(19.8)	0.67(17.0)	1.86(47.3)	0.94(23.9)	1.37(34.9)
3/4	3/4	FNPT12-HTSE-NPT12-	1.50(38.1)	0.81(20.6)	0.58(14.8)	1.77(44.9)	0.75(19.1)	1.50(38.1)
3/4	1	FNPT12-HTSE-NPT16-	1.63(41.4)	0.81(20.6)	0.79(20.0)	1.86(47.3)	0.94(23.9)	1.50(38.1)
1	1	FNPT16-HTSE-NPT16-	1.91(48.5)	1.00(25.4)	0.79(20.0)	2.07(52.5)	0.94(23.9)	1.75(44.5)

Female BSPT Tapered Pipe Threads

Male BSPT Tapered Threads

P-BSPT Size	Px-BSPT Size	Ordering Number	Dimension, in.(mm)					
			L	B	E	Lx	Bx	T
1/8	1/8	FBT2-HTSE-MBT2-	0.75(19.1)	0.41(10.4)	0.19(4.8)	0.75(19.1)	0.38(9.7)	0.63(15.9)
1/8	1/4	FBT2-HTSE-MBT4-	0.78(19.8)	0.41(10.4)	0.25(6.4)	1.00(25.4)	0.56(14.2)	0.63(15.9)
1/8	3/8	FBT2-HTSE-MBT6-	0.95(24.2)	0.41(10.4)	0.31(7.9)	1.07(27.2)	0.56(14.2)	0.75(19.1)
1/4	1/4	FBT4-HTSE-MBT4-	1.00(25.4)	0.59(15.0)	0.25(6.4)	1.06(27.0)	0.56(14.2)	0.75(19.1)
1/4	3/8	FBT4-HTSE-MBT6-	1.00(25.4)	0.59(15.0)	0.31(7.9)	1.06(27.0)	0.56(14.2)	0.75(19.1)
1/4	1/2	FBT4-HTSE-MBT8-	1.15(29.1)	0.59(15.0)	0.38(9.6)	1.40(35.5)	0.75(19.1)	1.00(25.4)
3/8	3/8	FBT6-HTSE-MBT6-	1.20(30.6)	0.59(15.0)	0.31(7.9)	1.20(30.6)	0.56(14.2)	1.00(25.4)
3/8	1/2	FBT6-HTSE-MBT8-	1.20(30.6)	0.59(15.0)	0.38(9.6)	1.38(35.0)	0.75(19.1)	1.00(25.4)
3/8	3/4	FBT6-HTSE-MBT12-	1.23(31.2)	0.59(15.0)	0.54(13.8)	1.56(39.6)	0.75(19.1)	1.37(34.9)
1/2	1/2	FBT8-HTSE-MBT8-	1.50(38.1)	0.78(19.8)	0.38(9.6)	1.61(40.8)	0.75(19.1)	1.37(34.9)
1/2	3/4	FBT8-HTSE-MBT12-	1.43(36.2)	0.78(19.8)	0.58(14.8)	1.61(40.8)	0.75(19.1)	1.37(34.9)
1/2	1	FBT8-HTSE-MBT16-	1.45(36.9)	0.78(19.8)	0.67(17.0)	1.86(47.3)	0.94(23.9)	1.37(34.9)
3/4	3/4	FBT12-HTSE-MBT12-	1.50(38.1)	0.81(20.6)	0.58(14.8)	1.77(44.9)	0.75(19.1)	1.50(38.1)
3/4	1	FBT12-HTSE-MBT16-	1.63(41.4)	0.81(20.6)	0.79(20.0)	1.86(47.3)	0.94(23.9)	1.50(38.1)
1	1	FBT16-HTSE-MBT16-	1.91(48.5)	1.00(25.4)	0.79(20.0)	2.07(52.5)	0.94(23.9)	1.75(44.5)

Female Elbows



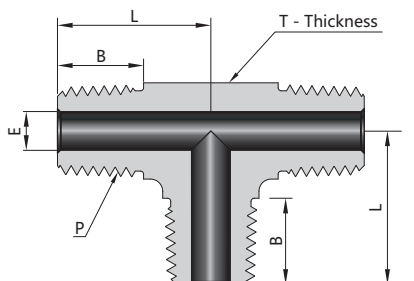
Female NPT Threads

P-NPT Size	Ordering Number	Dimension, in.(mm)					
		A	B	C	D	E	T
1/4	FNPT4-HTFE-FNPT4-	1.50(38.1)	1.25(31.8)	1.00(25.4)	0.81(20.6)	0.12(3.0)	0.75(19.05)
3/8	FNPT6-HTFE-FNPT6-	2.00(50.8)	1.50(38.1)	1.00(25.4)	1.00(25.4)	0.31(8.0)	1.00(25.4)
1/2	FNPT8-HTFE-FNPT8-	3.0(76.2)	1.88(47.8)	1.50(38.1)	1.25(31.75)	0.31(8.0)	1.25(31.75)
3/4	FNPT12-HTFE-FNPT12-	3.0(76.2)	2.18(55.3)	1.50(38.1)	1.50(38.1)	0.39(10.0)	1.38(35.05)
1	FNPT16-HTFE-FNPT16-	4.12(104.65)	2.5(63.5)	2.06(52.37)	1.56(39.67)	0.39(10.0)	1.75(44.45)

Female BSPT Tapered Threads

P-BSPT Size	Ordering Number	Dimension, in.(mm)					
		A	B	C	D	E	T
1/4	FBT4-HTFE-FBT4-	1.50(38.1)	1.25(31.8)	1.00(25.4)	0.81(20.6)	0.12(3.0)	0.75(19.05)
3/8	FBT6-HTFE-FBT6-	2.00(50.8)	1.50(38.1)	1.00(25.4)	1.00(25.4)	0.31(8.0)	1.00(25.4)
1/2	FBT8-HTFE-FBT8-	3.0(76.2)	1.88(47.8)	1.50(38.1)	1.25(31.75)	0.31(8.0)	1.25(31.75)
3/4	FBT12-HTFE-FBT12-	3.0(76.2)	2.18(55.3)	1.50(38.1)	1.50(38.1)	0.39(10.0)	1.38(35.05)
1	FBT16-HTFE-FBT16-	4.12(104.65)	2.5(63.5)	2.06(52.37)	1.56(39.67)	0.39(10.0)	1.75(44.45)

Male Tees



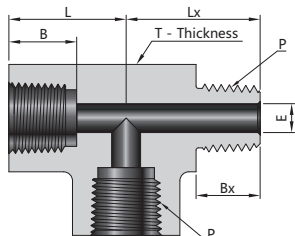
Male NPT Threads

P-NPT Size	Ordering Number	Dimension, in.(mm)			
		L	B	E	T
1/8	NPT2-HTMT-NPT2-NPT2-	0.75(19.1)	0.38(9.7)	0.19(4.8)	0.50(12.7)
1/4	NPT4-HTMT-NPT4-NPT4-	1.00(25.4)	0.56(14.2)	0.25(6.4)	0.63(15.9)
3/8	NPT6-HTMT-NPT6-NPT6-	1.10(28.0)	0.56(14.2)	0.31(7.9)	0.75(19.1)
1/2	NPT8-HTMT-NPT8-NPT8-	1.44(36.6)	0.75(19.1)	0.38(9.6)	1.00(25.4)
3/4	NPT12-HTMT-NPT12-NPT12-	1.56(39.6)	0.75(19.1)	0.58(14.8)	1.37(34.9)
1	NPT16-HTMT-NPT16-NPT16-	1.89(48.0)	0.94(23.9)	0.79(20.0)	1.50(38.1)

Male BSPT Tapered Threads

P-BSPT Size	Ordering Number	Dimension, in.(mm)			
		L	B	E	T
1/8	MBT2-HTMT-MBT2-MBT2-	0.75(19.1)	0.38(9.7)	0.19(4.8)	0.50(12.7)
1/4	MBT4-HTMT-MBT4-MBT4-	1.00(25.4)	0.56(14.2)	0.25(6.4)	0.63(15.9)
3/8	MBT6-HTMT-MBT6-MBT6-	1.10(28.0)	0.56(14.2)	0.31(7.9)	0.75(19.1)
1/2	MBT8-HTMT-MBT8-MBT8-	1.44(36.6)	0.75(19.1)	0.38(9.6)	1.00(25.4)
3/4	MBT12-HTMT-MBT12-MBT12-	1.56(39.6)	0.75(19.1)	0.58(14.8)	1.37(34.9)
1	MBT16-HTMT-MBT16-MBT16-	1.89(48.0)	0.94(23.9)	0.79(20.0)	1.50(38.1)

Male Street Tees



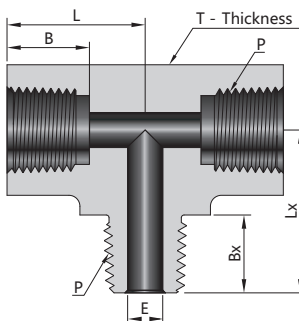
NPT Threads

P-NPT Size	Ordering Number	Dimension, in.(mm)					
		L	B	Lx	Bx	E	T
1/8	FNPT2-HTMST-NPT2-FNPT2-	0.75(19.1)	0.41(10.4)	0.75(19.1)	0.38(9.7)	0.19(4.8)	0.63(15.9)
1/4	FNPT4-HTMST-NPT4-FNPT4-	1.00(25.4)	0.59(15.0)	1.06(27.0)	0.56(14.2)	0.25(6.4)	0.75(19.1)
3/8	FNPT6-HTMST-NPT6-FNPT6-	1.20(30.6)	0.59(15.0)	1.20(30.6)	0.56(14.2)	0.31(7.9)	1.00(25.4)
1/2	FNPT8-HTMST-NPT8-FNPT8-	1.50(38.1)	0.78(19.8)	1.61(40.8)	0.75(19.1)	0.38(9.6)	1.37(34.9)
3/4	FNPT12-HTMST-NPT12-FNPT12-	1.50(38.1)	0.81(20.6)	1.77(44.9)	0.75(19.1)	0.58(14.8)	1.50(38.1)
1	FNPT16-HTMST-NPT16-FNPT16-	1.91(48.5)	1.00(25.4)	2.07(52.5)	0.94(23.9)	0.79(20.0)	1.75(44.5)

BSPT Tapered Pipe Threads

P-BSPT Size	Ordering Number	Dimension, in.(mm)					
		L	B	Lx	Bx	E	T
1/8	FBT2-HTMST-MBT2-FBT2-	0.75(19.1)	0.41(10.4)	0.75(19.1)	0.38(9.7)	0.19(4.8)	0.63(15.9)
1/4	FBT4-HTMST-MBT4-FBT4-	1.00(25.4)	0.59(15.0)	1.06(27.0)	0.56(14.2)	0.25(6.4)	0.75(19.1)
3/8	FBT6-HTMST-MBT6-FBT6-	1.20(30.6)	0.59(15.0)	1.20(30.6)	0.56(14.2)	0.31(7.9)	1.00(25.4)
1/2	FBT8-HTMST-MBT8-FBT8-	1.50(38.1)	0.78(19.8)	0.61(40.8)	0.75(19.1)	0.38(9.6)	1.37(34.9)
3/4	FBT12-HTMST-MBT12-FBT12-	1.50(38.1)	0.81(20.6)	1.77(44.9)	0.75(19.1)	0.58(14.8)	1.50(38.1)
1	FBT16-HTMST-MBT16-FBT16-	1.91(48.5)	1.00(25.4)	2.07(52.5)	0.94(23.9)	0.79(20.0)	1.75(44.5)

Male Branch Tees



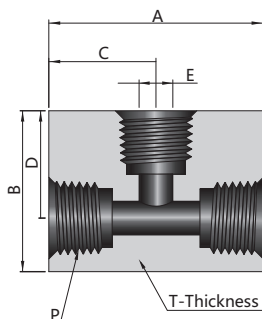
NPT Threads

P-NPT Size	Ordering Number	Dimension, in.(mm)					
		L	B	Lx	Bx	E	T
1/8	FNPT2-HTMBT-FNPT2-NPT2-	0.75(19.1)	0.41(10.4)	0.75(19.1)	0.38(9.7)	0.19(4.8)	0.63(15.9)
1/4	FNPT4-HTMBT-FNPT4-NPT4-	1.00(25.4)	0.59(15.0)	1.06(27.0)	0.56(14.2)	0.25(6.4)	0.75(19.1)
3/8	FNPT6-HTMBT-FNPT6-NPT6-	1.20(30.6)	0.59(15.0)	1.20(30.6)	0.56(14.2)	0.31(7.9)	1.00(25.4)
1/2	FNPT8-HTMBT-FNPT8-NPT8-	1.50(38.1)	0.78(19.8)	1.61(40.8)	0.75(19.1)	0.38(9.6)	1.37(34.9)
3/4	FNPT12-HTMBT-FNPT12-NPT12-	1.50(38.1)	0.81(20.6)	1.77(44.9)	0.75(19.1)	0.58(14.8)	1.50(38.1)
1	FNPT16-HTMBT-FNPT16-NPT16-	1.91(48.5)	1.00(25.4)	2.07(52.5)	0.94(23.9)	0.79(20.0)	1.75(44.5)

BSPT Tapered Pipe Threads

P-BSPT Size	Ordering Number	Dimension, in.(mm)					
		L	B	Lx	Bx	E	T
1/8	FBT2-HTMBT-FBT2-MBT2-	0.75(19.1)	0.41(10.4)	0.75(19.1)	0.38(9.7)	0.19(4.8)	0.63(15.9)
1/4	FBT4-HTMBT-FBT4-MBT4-	1.00(25.4)	0.59(15.0)	1.06(27.0)	0.56(14.2)	0.25(6.4)	0.75(19.1)
3/8	FBT6-HTMBT-FBT6-MBT6-	1.20(30.6)	0.59(15.0)	1.20(30.6)	0.56(14.2)	0.31(7.9)	1.00(25.4)
1/2	FBT8-HTMBT-FBT8-MBT8-	1.50(38.1)	0.78(19.8)	1.61(40.8)	0.75(19.1)	0.38(9.6)	1.37(34.9)
3/4	FBT12-HTMBT-FBT12-MBT12-	1.50(38.1)	0.81(20.6)	1.77(44.9)	0.75(19.1)	0.58(14.8)	1.50(38.1)
1	FBT16-HTMBT-FBT16-MBT16-	1.91(48.5)	1.00(25.4)	2.07(52.5)	0.94(23.9)	0.79(20.0)	1.75(44.5)

Female Tees



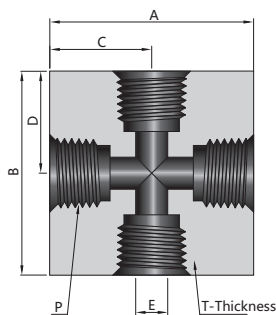
Female NPT Threads

P-NPT Size	Ordering Number	Dimension, in.(mm)					
		A	B	C	D	E	T
1/4	FNPT4-HTFT-FNPT4-FNPT4-	2.00(50.8)	1.25(31.8)	1.00(25.4)	0.81(20.6)	0.12(3.0)	0.75(19.05)
3/8	FNPT6-HTFT-FNPT6-FNPT6-	2.00(50.8)	1.50(38.1)	1.00(25.4)	1.00(25.4)	0.31(8.0)	1.00(25.4)
1/2	FNPT8-HTFT-FNPT8-FNPT8-	3.0(76.2)	1.88(47.8)	1.50(38.1)	1.25(31.75)	0.31(8.0)	1.25(31.75)
3/4	FNPT12-HTFT-FNPT12-FNPT12-	3.0(76.2)	2.18(55.3)	1.50(38.1)	1.50(38.1)	0.39(10.0)	1.38(35.05)
1	FNPT16-HTFT-FNPT16-FNPT16-	4.12(104.65)	2.5(63.5)	2.06(52.37)	1.56(39.67)	0.39(10.0)	1.75(44.45)

Female BSPT Tapered Pipe Threads

P-BSPT Size	Ordering Number	Dimension, in.(mm)					
		A	B	C	D	E	T
1/4	FBT4-HTFT-FBT4-FBT4-	2.00(50.8)	1.25(31.8)	1.00(25.4)	0.81(20.6)	0.12(3.0)	0.75(19.05)
3/8	FBT6-HTFT-FBT6-FBT6-	2.00(50.8)	1.50(38.1)	1.00(25.4)	1.00(25.4)	0.31(8.0)	1.00(25.4)
1/2	FBT8-HTFT-FBT8-FBT8-	3.0(76.2)	1.88(47.8)	1.50(38.1)	1.25(31.75)	0.31(8.0)	1.25(31.75)
3/4	FBT12-HTFT-FBT12-FBT12-	3.0(76.2)	2.18(55.3)	1.50(38.1)	1.50(38.1)	0.39(10.0)	1.38(35.05)
1	FBT16-HTFT-FBT16-FBT16-	4.12(104.65)	2.5(63.5)	2.06(52.37)	1.56(39.67)	0.39(10.0)	1.75(44.45)

Female Crosses



Female NPT Threads

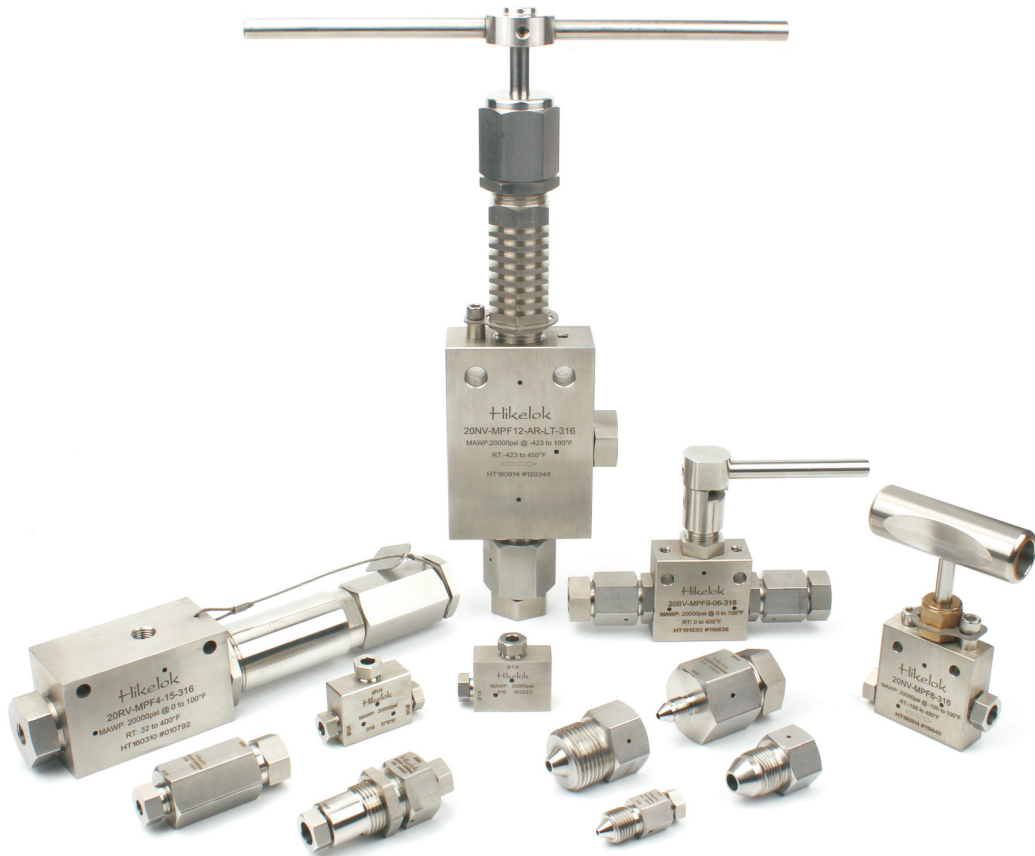
P-NPT Size	Ordering Number	Dimension, in.(mm)					
		A	B	C	D	E	T
1/4	FNPT4-HTFC-FNPT4-FNPT4-FNPT4-	2.00(50.8)	2.00(50.8)	1.00(25.4)	1.00(25.4)	0.25(6.4)	0.75(19.05)
3/8	FNPT6-HTFC-FNPT6-FNPT6-FNPT6-	2.00(50.8)	2.00(50.8)	1.00(25.4)	1.00(25.4)	0.25(6.4)	1.00(25.4)
1/2	FNPT8-HTFC-FNPT8-FNPT8-FNPT8-	2.49(63.2)	2.49(63.2)	1.25(31.6)	1.25(31.6)	0.31(8.0)	1.25(31.75)
3/4	FNPT12-HTFC-FNPT12-FNPT12-FNPT12-	3.0(76.2)	3.0(76.2)	1.50(38.1)	1.50(38.1)	0.39(10.0)	1.38(35.05)
1	FNPT16-HTFC-FNPT16-FNPT16-FNPT16-	4.12(105)	4.12(105)	2.06(52.3)	2.06(52.3)	0.39(10.0)	1.75(44.45)

Female BSPT Tapered Pipe Threads

P-BSPT Size	Ordering Number	Dimension, in.(mm)					
		A	B	C	D	E	T
1/4	FBT4-HTFC-FBT4-FBT4-FBT4-	2.00(50.8)	2.00(50.8)	1.00(25.4)	1.00(25.4)	0.25(6.4)	0.75(19.05)
3/8	FBT6-HTFC-FBT6-FBT6-FBT6-	2.00(50.8)	2.00(50.8)	1.00(25.4)	1.00(25.4)	0.25(6.4)	1.00(25.4)
1/2	FBT8-HTFC-FBT8-FBT8-FBT8-	2.49(63.2)	2.49(63.2)	1.25(31.6)	1.25(31.6)	0.31(8.0)	1.25(31.75)
3/4	FBT12-HTFC-FBT12-FBT12-FBT12-	3.0(76.2)	3.0(76.2)	1.50(38.1)	1.50(38.1)	0.39(10.0)	1.38(35.05)
1	FBT16-HTFC-FBT16-FBT16-FBT16-	4.12(105)	4.12(105)	2.06(52.3)	2.06(52.3)	0.39(10.0)	1.75(44.45)

How to Order

NPT4		—	HTHN	—	NPT4	316
Port1 Type	Port1 Size		Fitting Type	Port2/3/4 Type	Port2/3/4 Size	Material
NPT NPT(Male)	2 1/8 in.		HTHN Hex Nipple	Same as the Port1	Same as the Port1	316 316 S.S.
FNPT NPT(Female)	4 1/4 in.		HTLN Hex Long Nipple			316L 316L S.S.
MBT BSPT(Male)	6 3/8 in.		HTHC Hex Coupling			304 304 S.S.
FBT BSPT(Female)	8 1/2 in.		HTA Adapter			304L 304L S.S.
	12 3/4 in.		HTME Male Elbow			A825 Alloy 825
	16 1 in.		HTSE Street Elbow			
			HTFE Female Elbow			
			HTMT Male Tee			
			HTMST Male Street Tee			
			HTMBT Male Branch Tee			
			HTFT Female Tee			
			HTFC Female Cross			
			HTP Pipe Plug			



Ultra-High Pressure

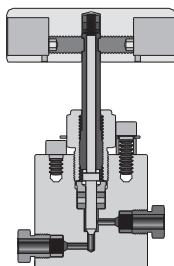
Medium Pressure Valves,
Fittings and Tubing 20000 psig

20 Series

Contents

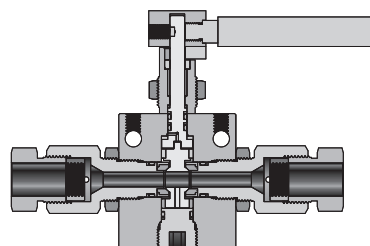
Medium Pressure Needle Valve (20NV Series)

12-37



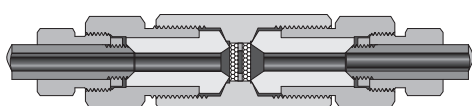
Medium Pressure Ball Valves (20BV Series)

12-42



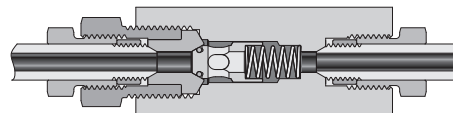
Medium Pressure Filters (20F Series)

12-45



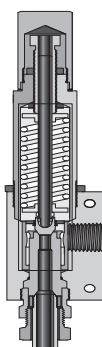
Medium Pressure Check Valve (20CV Series)

12-48



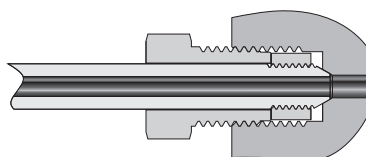
Medium Pressure Relief Valves (20RV Series)

12-50



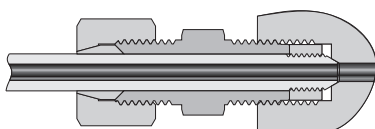
Medium Pressure Fittings, Tubing and Nipples (20 Series)

12-53



Anti-Vibration Collet Gland Assemblies (20 Series)

12-59



Medium Pressure Needle Valve

20NV Series

Features

- ❖ Tubing sizes available for 1/4", 3/8", 9/16", 3/4", 1"
- ❖ Non-rotating stem prevents stem/seat galling.
- ❖ 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 and provides dependable stem and body sealing
- ❖ Graphite packing working temperature up to 800°F(427°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



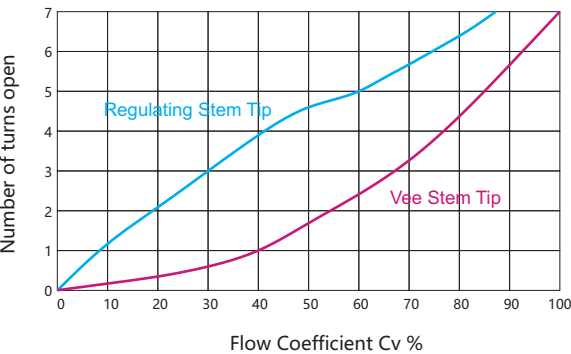
Technical Data

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).
- ❖ Work Temperatures
PTFE packing : -65°F (-53°C) to 450°F (232°C)
RPTFE glass packing : -65°F (-53°C) to 600°F (316°C)
Graphite packing : -65°F (-53°C) to 800°F (427°C)

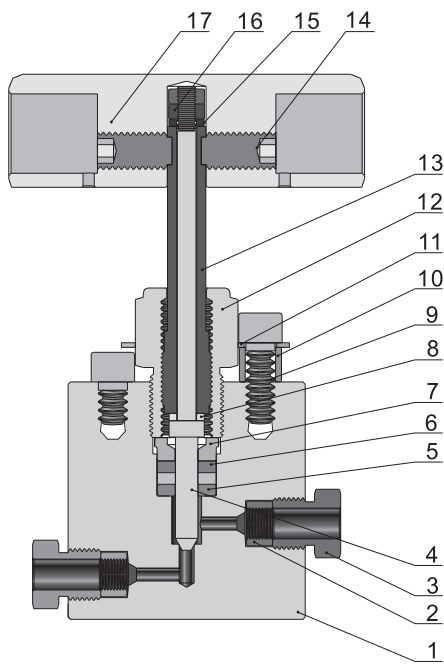
Flow Data at 100°F(38°C)



Pressure-Temperature Ratings

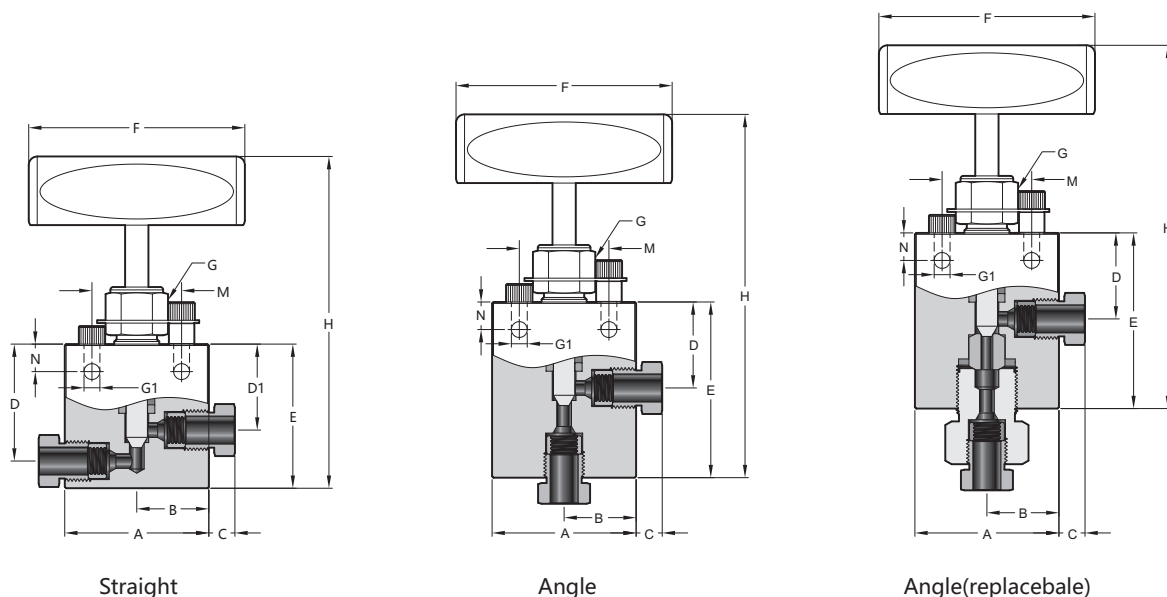
Temperature, °F(°C)	Working Pressure, psig(bar)
-65 (-53) to 200 (93)	20 000 (1378)
300 (148)	19 500 (1344)
400 (204)	19 000 (1310)
500 (260)	18 600 (1282)
600 (315)	18 000 (1241)
700 (371)	17 300 (1192)
800 (427)	16 800 (1158)

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	630 S.S. / A564
5	Gland	316 S.S. / A479
6	Packing	PTFE / Graphite / RPTFE Glass
7	Packing ring	316 S.S. / A479
8	Gland	C63000 / B150
9	Screw	304 S.S.
10	Ring	304 S.S.
11	Lock plate	304 S.S.
12	Bonnet	C63000 / B150
13	Stem guard	316 S.S. / A479
14	Screw	304 S.S.
15	Gland	C63000 / B150
16	Nut	304 S.S.
17	Handle	303 S.S.

Dimensions



Dimensions(Straight)

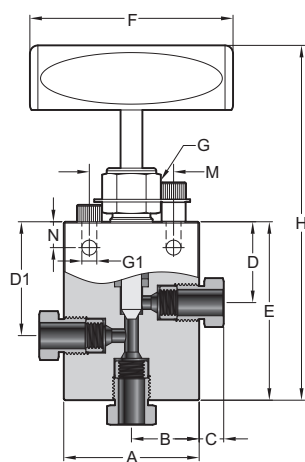
Basic Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
20NV-MPF4-	MPF4	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.38 (9.7)	1.62 (41.2)	1.19 (30.2)	2.00 (50.8)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	4.69 (119.1)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF6-	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)

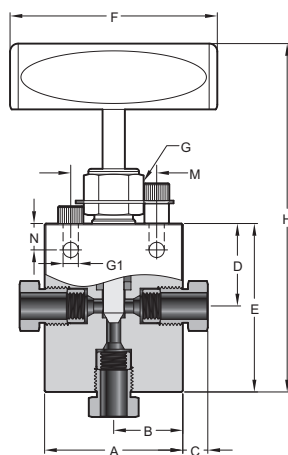
Basic Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
20NV-MPF4-A-	MPF4	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.38 (9.7)	1.19 (30.2)	—	2.44 (61.9)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	4.81 (122.3)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF6-A-	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)

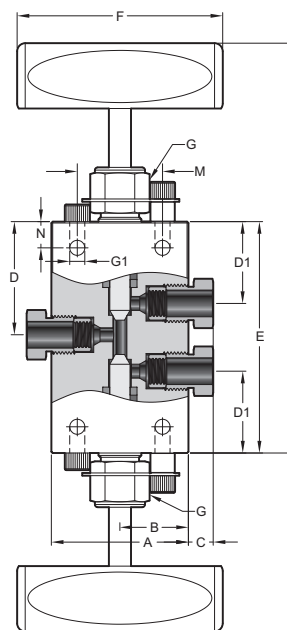
Basic Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
20NV-MPF4-AR-	MPF4	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.38 (9.7)	1.19 (30.2)	2.13 (54.0)	2.25 (57.2)	3.00 (76.2)	0.75 (19.1)	0.22 (5.6)	5.75 (146.1)	0.62 (15.8)	0.38 (9.7)	0.75 (19.1)
20NV-MPF6-AR-	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)



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 — G — A — 316L**

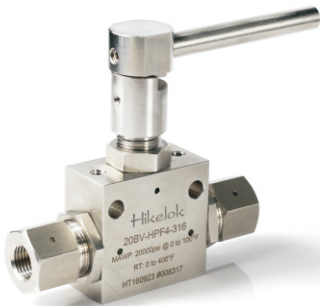
Series	Connection Sizes	Stem Tips	Packing	Flow Patterns	Body Material
20NV	MPF4 1/4 in.	Vee	PTFE	Straight	316 316 S.S.
	MPF6 3/8 in.	R Regulating	RG RPTFE Glass	A Angle	316L 316L S.S.
	MPF9 9/16 in.		G Graphite	AR Angle, replaceable seat	
	MPF12 3/4 in.			3A 3-way, 2 on pressure	
	MPF16 1 in.			3B 3-way,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

Medium Pressure Ball Valve

20BV Series

Features

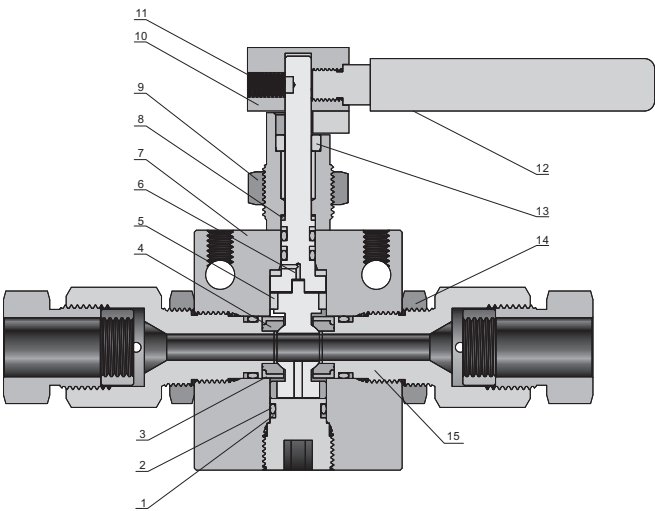
- ❖ One-piece, trunnion mounted style, ideal for severe duty applications.
- ❖ Two-way and three-way valve configurations.
- ❖ PEEK seats offer excellent resistance to chemicals, heat, and wear/abrasion.
- ❖ Full-port flow path minimizes pressure drop.
- ❖ 316 cold worked stainless steel construction.
- ❖ Fluorocarbon FKM O-rings for operation from 0°F to 400°F (-18°C to 204°C)
- ❖ Wide selection of tube and pipe end connections available.



Pressure-Temperature Ratings

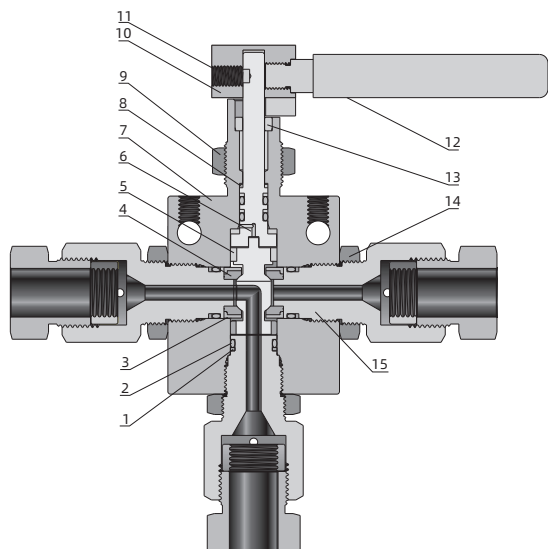
Temperature, °F (°C)	Working Pressure, psig(bar)
0(-17) to 100(37)	20 000(1378)
200(93)	20 000(1378)
250(121)	17 500(1206)
300(148)	15 000(1034)
350(176)	12 500(862)
400(204)	10 000(689)

Standard Materials of Construction



2-Way Straight Valves

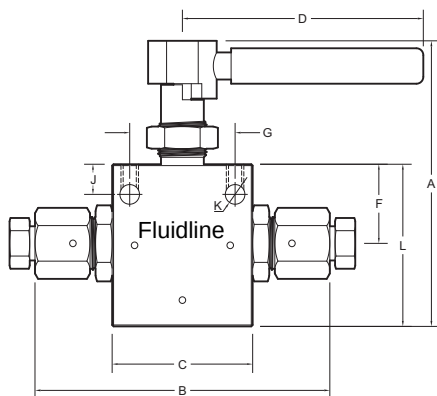
Item	Component	Material Grade / ASTM Specification
1	Ring	PTFE / D1710
2	O-ring	FKM
3	Seat Retainer	316 S.S. / A479
4	Seat	PEEK
5	Bearing	PEEK
6	Stem	316 S.S. / A479
7	Body	316 S.S. / A479
8	Bearing	PEEK
9	Nut	316 S.S. / A479
10	Handle Seat	316 S.S. / A479
11	Screw	304 S.S.
12	Handle	304 S.S.
13	Sleeve	C63000 / B150
14	Lock Nut	316 S.S. / A479
15	Seat Gland	304 S.S. / A479



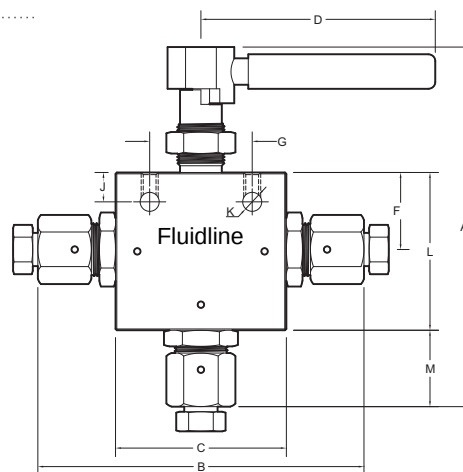
3-Way Valves

Item	Component	Material Grade / ASTM Specification
1	Ring	PTFE / D1710
2	O-ring	FKM
3	Seat Retainer	316 S.S. / A479
4	Seat	PEEK
5	Bearing	PEEK
6	Stem	316 S.S. / A479
7	Body	316 S.S. / A479
8	Bearing	PEEK
9	Nut	316 S.S. / A479
10	Handle Seat	316 S.S. / A479
11	Screw	304 S.S.
12	Handle	304 S.S.
13	Sleeve	C63000 / B150
14	Lock Nut	316 S.S. / A479
15	Seat Gland	304 S.S. / A479

Dimensions



2-Way Valves



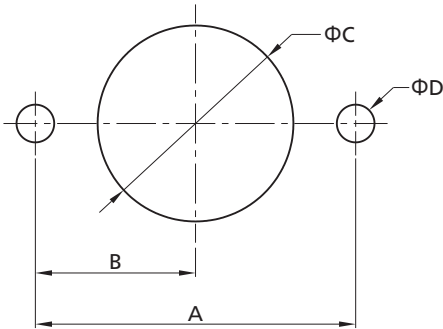
3-Way Valves

Body Style	Ordering Number	Connection Type and Size	CV	A	B	C	D	F	G	H	J	K	L	M	Thickness	Pressure at Room Temperature, psig(bar)
2-Way	20BV-MPF4-06-	MPF4	0.36													20000 (1379)
	20BV-MPF6-06-	MPF6	1.23													
	20BV-MPF9-06-	MPF9	1.51													
	20BV-HPF4-06-	HPF4	0.26	4.33 (110)	4.19 (106.5)	2 (50.8)	3.37 (85.6)	1.13 (28.6)	1.5 (38.1)	0.75 (19.1)	0.43 (10.9)	0.28 (7.1)	1.91 (48.4)	—	1 (25.4)	
	20BV-HPF6-06-	HPF6	0.47													
	20BV-HPF9-06-	HPF9	1.05													
3-Way	20BV-MPF9-10-	MPF9	2.93	4.97 (126.3)	5.53 (140.4)	3 (76.2)	4.99 (126.8)	1.38 (34.9)	2 (50.8)	1 (25.4)	0.41 (10.3)	0.28 (7.1)	2.5 (63.5)	—	1.38 (34.9)	
	20BV-MPF12-10-	MPF12	3.51													
	20BV-MPF4-05-3-	MPF4	0.17													
	20BV-MPF6-05-3-	MPF6	0.5													
	20BV-MPF9-05-3-	MPF9		5.64 (143.4)	4.72 (119.9)	2.5 (63.5)	3.37 (85.6)	1.13 (28.6)	1.5 (38.1)	0.75 (19.1)	0.43 (10.9)	0.28 (7.1)	2.25 (57.2)	0.97 (24.6)	1 (25.4)	
	20BV-HPF4-05-3-	HPF4	2.6													
	20BV-HPF6-05-3-	HPF6	0.47													
	20BV-HPF9-05-3-	HPF9	0.5													
	20BV-MPF9-10-3-	MPF9		6.55 (166.4)	5.54 (140.8)	3 (76.2)	4.99 (126.8)	1.38 (34.9)	2 (50.8)	1 (25.4)	0.41 (10.3)	0.28 (7.1)	2.88 (73)	1.19 (30.2)	1.38 (34.9)	
	20BV-MPF12-10-3-	MPF12														

Panel Mounting Dimensions

Body Style	Orifice No.	A in.(mm)	B in.(mm)	C in.(mm)	D in.(mm)
2-way	06	1.5 (38.1)	0.75 (19.1)	1.06 (26.9)	0.28 (7.1)
	10	2 (50.8)	1 (25.4)	1.5 (38.1)	0.28 (7.1)
	05	1.5 (38.1)	0.75 (19.1)	1.06 (26.9)	0.28 (7.1)
3-way	10	2 (50.8)	1 (25.4)	1.5 (38.1)	0.28 (7.1)

Note: Body mounting 1/4-20 thread



How to Order

20BV	MPF6	05	3	316
Series	Connector Sizes	Orifice No.	Flow Patterns	Body Material
20BV	MPF6 3/8 in.	For 2-way	Straight 3 3-Way	316 316 S.S.
	MPF9 9/16 in.	06 1/4 in.		
	MPF12 3/4 in.	10 3/8 in.		
	MPF16 1 in.	For 3-way		
	HPF4 1/4 in.	05 3/16 in.		
	HPF6 3/8 in.	10 3/8 in.		
	HPF9 9/16 in.			

Medium Pressure Line Filters

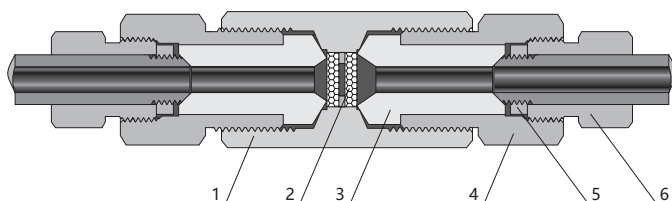
20F Series line Filters

Dual-Disc Line Filters

Features

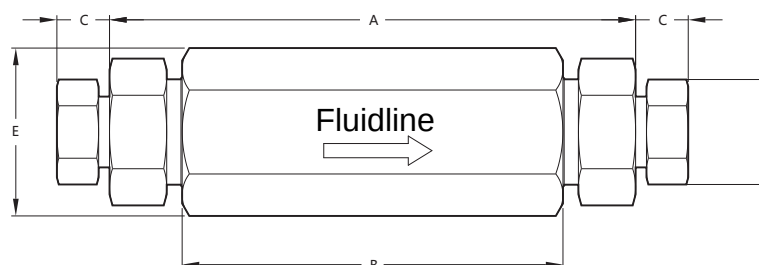
- ❖ Maximum working pressure up to 20,000 psig(1379 bar)
- ❖ Working temperature from -60°F to 660°F (-50°C to 350°C)
- ❖ Tubing size available in 9/16"
- ❖ Dual-disc design allows the upstream filter element to trap the large particulate contaminants before they can reach and clog the smaller pore-size downstream element
- ❖ Downstream/upstream element nominal pore size: 5/10, 10/35 and 35/65 µm. Other element combinations available on request
- ❖ Easy to replace filter elements
- ❖ Pressure differential not to exceed 1000 psig(69 bar) in a flowing condition

Standard Materials of Construction



Item	Component	Material Grade / ASTM Specification
1	Body	316 S.S. / A479
2	Filter Element	Sintered 316 S.S.
3	Cover	316 S.S. / A479
4	Gland Nut	316 S.S. / A479
5	Collar	316 S.S. / A479
6	Gland	316 S.S. / A479

Ordering Information and Dimensions



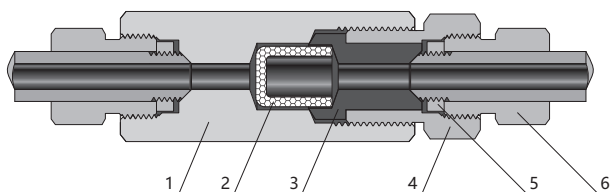
Ordering Number	Connection	Orifice in.(mm)	Nominal Pore Size (µm)	Effective Filter Element Area in. ² mm ²	Dimensions, in.(mm)					Working Pressure psig(bar)
					A	B	C	D(Hex)	E(Hex)	
20F-MPF9-0510-	MPF9	0.31 (7.9)	5/10	0.25(161.3)	4.30 (109.2)	2.94 (74.6)	0.55 (14.0)	0.94 (23.8)	1.38 (35.0)	20,000(1379)
20F-MPF9-1035-			10/35							
20F-MPF9-3565-			35/65							

Cup-Type Line Filters

Features

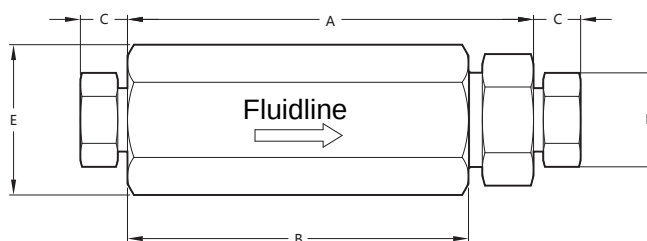
- ❖ Working temperature from -60°F to 660°F (-50°C to 350°C)
- ❖ Tubing sizes available in 1/4", 3/8", 9/16", 3/4" and 1"
- ❖ Cup design to offer about six times the effective filter area as compared to disc-type units, and recommended in systems requiring both maximum filter surface area and high flow rates
- ❖ Nominal pore sizes for filter elements: 5, 35 and 65µm
- ❖ Easy to replace filter elements
- ❖ Pressure differential not to exceed 1000 psig (68.9 bar) in a flowing condition

Standard Materials of Construction



Item	Component	Material Grade/ASTM Specification
1	Body	316 S.S. / A479
2	Filter Element	Sintered 316 S.S.
3	Cover	316 S.S. / A479
4	Gland Nut	316 S.S. / A479
5	Collar	316 S.S. / A479
6	Gland	316 S.S. / A479

Ordering Information and Dimensions



Ordering Number	Connection	Orifice in.(mm)	Nominal Pore Size (µm)	Effective Filter Element Area in. ² /mm ²	Dimensions, in.(mm)					Working Pressure psig(bar)
					A	B	C	D(Hex)	E(Hex)	
20F-MPF4-5-	MPF4	0.13 (3.2)	5	0.81(522.6)	2.94 (74.1)	2.50 (63.5)	0.38 (9.7)	0.50 (12.7)	0.81 (20.6)	20,000(1379)
20F-MPF4-35-			35							
20F-MPF4-65-			65							
20F-MPF6-5-	MPF6	0.22 (5.5)	5	0.81(522.6)	3.12 (79.3)	2.62 (66.6)	0.44 (11.2)	0.63 (15.9)	1.00 (25.4)	20,000(1379)
20F-MPF6-35-			35							
20F-MPF6-65-			65							
20F-MPF9-5-	MPF9	0.36 (9.1)	5	1.53(987.1)	4.18 (106.2)	3.50 (88.9)	0.55 (14.0)	0.94 (23.8)	1.38 (35.0)	20,000(1379)
20F-MPF9-35-			35							
20F-MPF9-65-			65							
20F-MPF12-5-	MPF12	0.52 (13.1)	5	2.65(1709.7)	5.50 (139.7)	4.75 (120.7)	0.60 (15.2)	1.19 (30.2)	1.75 (44.5)	20,000(1379)
20F-MPF12-35-			35							
20F-MPF12-65-			65							
20F-MPF16-5-	MPF16	0.69 (17.5)	5	5.00(3225.8)	6.62 (168.2)	5.75 (146.1)	0.74 (18.7)	1.38 (35.0)	2.12 (54.0)	20,000(1379)
20F-MPF16-35-			35							
20F-MPF16-65-			65							

How to Order

20F — MPF4 — 5 — 316			
Series	Connection Size	Nominal Pore Size	Body Material
20F	MPF4 1/4 in.	For Dual-Disc Line Filters	316 316 S.S.
	MPF6 3/8 in.	0510 5/10 µm	
	MPF9 9/16 in.	1035 10/35 µm	
		3565 35/65 µm	
	MPF12 3/4 in.	For Cup-Type Line Filters	
	MPF16 1 in.	5 5 µm	
		35 35 µm	
		65 65 µm	

Medium Pressure Check Valve

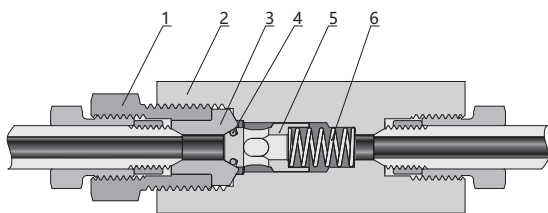
O-ring Check Valves

Features

- ❖ Maximum working pressure up to 20,000 psig (1379 bar)
- ❖ Working temperature from 0°F to 400°F (-18°C to 204°C)
- ❖ Tubing sizes available from 1/4" to 1"
- ❖ Cracking pressure: 14 psig~26 psig (0.966 bar~1.794 bar)
- ❖ Provides unidirectional flow and tight shut-off for liquids and gases with high reliability.
When differential drops below cracking pressure, valve shuts off(Not for use as relief valve)
- ❖ Resilient O-ring seat design for noise-free closing and zero leakage

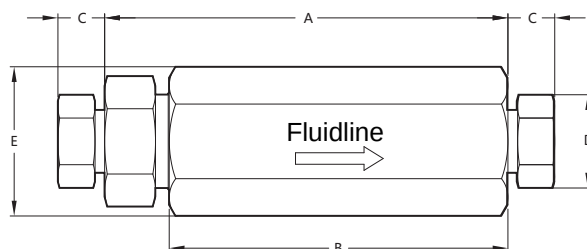


Standard Materials of Construction



Item	Component	Material Grade / ASTM Specification
1	Cover Gland	316 S.S. / A479
2	Valve Body	316 S.S. / A479
3	Cover	316 S.S. / A479
4	O-ring	Fluorocarbon FKM
5	Poppet	316 S.S. / A479
6	Spring	300 Series Stainless Steel

Ordering Information and Dimensions



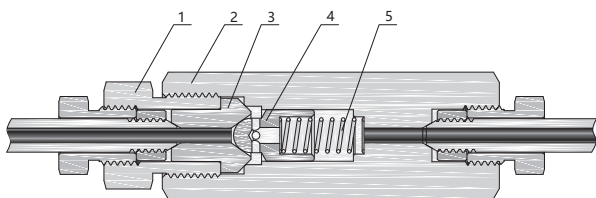
Ordering Number	Connection	Orifice in.(mm)	Cv	Dimensions, in.(mm)					Working Pressure psig(bar)
				A	B	C	D(Hex)	E(Hex)	
20CV-MPF4-V-	MPF4	0.125(3.18)	0.28	2.94 (74.7)	2.50 (63.5)	0.38 (9.7)	0.50 (12.7)	0.81 (20.6)	20,000(1379)
20CV-MPF6-V-	MPF6	0.218(5.54)	0.84	3.12 (79.3)	2.62 (66.6)	0.44 (11.2)	0.62 (15.8)	1.00 (25.4)	20,000(1379)
20CV-MPF9-V-	MPF9	0.359(9.12)	2.30	4.18 (106.2)	3.50 (88.9)	0.55 (14.0)	0.94 (23.9)	1.38 (35.1)	20,000(1379)
20CV-MPF12-V-	MPF12	0.516(13.11)	4.70	5.50 (139.7)	4.75 (120.7)	0.60 (15.2)	1.19 (30.2)	1.75 (44.5)	20,000(1379)
20CV-MPF16-V-	MPF16	0.688(17.48)	7.40	6.91 (175.6)	5.75 (146.1)	0.74 (18.8)	1.38 (35.1)	2.12 (53.9)	20,000(1379)

Ball Check Valves

Features

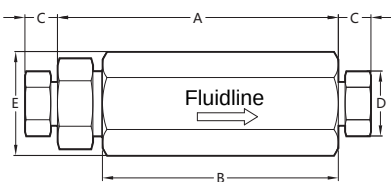
- ❖ Maximum working pressure up to 20,000 psig(1379 bar)
- ❖ Working temperature from -110°F to 800°F(-79°C to 427°C)
- ❖ Tubing sizes available from 1/4" to 1"
- ❖ Prevents reverse flow where leak-tight shut-off is not mandatory(Not for use as relief valve)
- ❖ An integral design of the ball and poppet to assure positive, in-line seating without "chatter".
Poppet is designed essentially for axial flow with minimum pressure drop
- ❖ Optional wetted materials of cover gland and ball poppet for longer life

Standard Materials of Construction



Item	Component	Material Grade / ASTM Specification
1	Cover Gland	316 S.S. / A479
2	Valve Body	316 S.S. / A479
3	Cover	316 S.S. / A479
4	Ball Poppet	316 S.S. / A479
5	Spring	300 Series Stainless Steel

Ordering Information and Dimensions



Ordering Number	Connection	Orifice in.(mm)	Cv	Dimensions, in.(mm)					Working Pressure psig(bar)
				A	B	C	D(Hex)	E(Hex)	
20CV-MPF4-B-	MPF4	0.125(3.18)	0.28	2.94 (74.7)	2.50 (63.5)	0.38 (9.7)	0.50 (12.7)	0.81 (20.6)	20,000(1379)
20CV-MPF6-B-	MPF6	0.218(5.54)	0.84	3.12 (79.3)	2.62 (66.6)	0.44 (11.2)	0.62 (15.8)	1.00 (25.4)	20,000(1379)
20CV-MPF9-B-	MPF9	0.359(9.12)	2.30	4.18 (106.2)	3.50 (88.9)	0.55 (14.0)	0.94 (23.9)	1.38 (35.1)	20,000(1379)
20CV-MPF12-B-	MPF12	0.516(13.11)	4.70	5.50 (139.7)	4.75 (120.7)	0.60 (15.2)	1.19 (30.2)	1.75 (44.5)	20,000(1379)
20CV-MPF16-B-	MPF16	0.688(17.48)	7.40	6.91 (175.6)	5.75 (146.1)	0.74 (18.8)	1.38 (35.1)	2.12 (53.9)	20,000(1379)

How to Order

20CV — MPF4 — B — Z — 316

Series	Connection Size	Seal Type	Seal material	Body Material
20CV	MPF4 1/4 in.	V Blunt	Fluorocarbon FKM	316 316 S.S.
	MPF6 3/8 in.	B Ball	BN Buna N	
	MPF9 9/16 in.		E Ethylene Propylene	
	MPF12 3/4 in.		N Neoprene	
	MPF16 1 in.		Z Kalrez	

Medium Pressure Relief Valves

20RV Series

Features

- ❖ Soft seat relief valves.
- ❖ Set pressure: 1500 to 20,000 psig(103 to1379 bar).
- ❖ Working temperature: 32°F to 400°F(0°C to 204°C).
- ❖ Liquid or gas service. Provide bubble tight shut-off of gas.
- ❖ Pressure settings are made at the factory and valves are tagged accordingly.
State the required set pressure with the order please.
- ❖ Lock wired secure cap to maintain set pressure.
- ❖ Easily exchangeable seat.
- ❖ Free assembly positions.
- ❖ Field adjustable and soft seat relief valves.

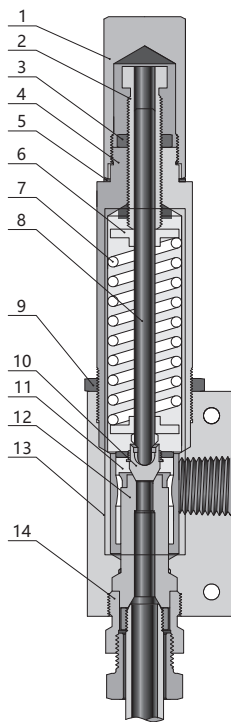


Technical Data

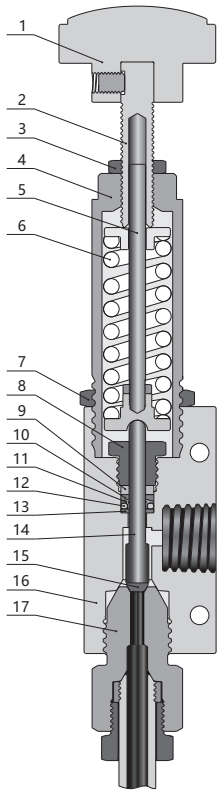
Ordering Number	Inlet		Outlet Connection Type	Orifice Size in.(mm)	Cv	Pressure Rating psig(bar)@100°F(38°C)		
	Tube OD in.	Connection Type				Minimum Set Pressure	Maximum Set Pressure	Maximum Back Pressure
20RV-MPF9-FNPT12-5-	9/16	MPF9	FNPT12	0.312(7.92)	1.2	1500(103)	5000(345)	500(34.5)
20RV-MPF9-FNPT12-10-	9/16	MPF9	FNPT12	0.25(6.35)	0.8	5000(345)	10,000(689)	500(34.5)
20RV-MPF9-FNPT12-20-	9/16	MPF9	FNPT12	0.156(3.96)	0.3	10,000(689)	20,000(1379)	500(34.5)

NOTE:
Maximum system operating pressure should not exceed 90% of relief valve set pressure.

Standard Materials of Construction

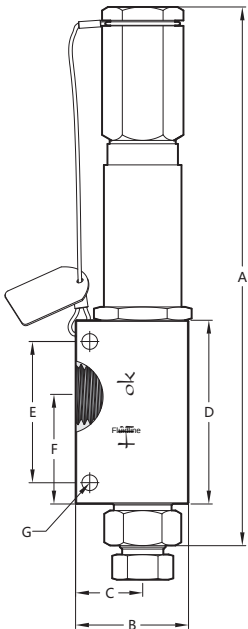


Item	Component	Valve Material
1	Cap	316 S.S. / A479
2	Adjusting Bolt	316 S.S. / A479
3	Lock Nut	316 S.S. / A479
4	Spring Cylinder	316 S.S. / A479
5	Gasket	316L S.S. / A276
6	Spring Washer	316 S.S. / A479
7	Spring	17-7PH / AMS5678
8	Spindle	316 S.S. / A479
9	Lock Nut	316 S.S. / A276
10	Plug	PEEK
11	Plug Guide	316 S.S. / A479
12	Seat	316 S.S. / A479
13	Valve Body	316 S.S. / A479
14	Seat Gland	316 S.S. / A479
Lubricant		Molybdenum Disulfide



Item	Component	Valve Material
1	Handle	6061 / B211
2	Set Screw	316 S.S. / A479
3	Lock Nut	316 S.S. / A276
4	Bonnet	316 S.S. / A479
5	Upper Stem	316 S.S. / A479
6	Spring	17-7PH / AMS5678
7	Lock Nut	316 S.S. / A276
8	Packing Gland	C63000 / B150
9	Washer	C63000 / B150
10	Backing Ring	PEEK
11	Backing Ring	PTFE
12	O-ring	Fluorocarbon FKM
13	Ring	PEEK
14	Lower Stem	316 S.S. / A479
15	Plug	PEEK
16	Body	316 S.S. / A479
17	Seat	316 S.S. / A479
Lubricant		Molybdenum Disulfide

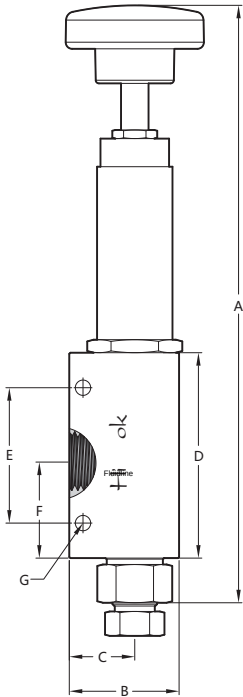
Dimensions



Relief Valves Dimensions

A	B	C	D	E	F	G
in.(mm)						
9.46 (240.4)	2.00 (50.8)	1.19 (30.2)	3.25 (82.6)	2.25 (57.1)	1.94 (49.3)	0.28 (7.1)

NOTE:
❖ G is the dimension of Mounting Holes.
❖ All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or Fluidline Group.



A	B	C	D	E	F	G	H
in.(mm)							
10.98 (278.8)	8.45 (214.6)	3.74 (95.0)	2.46 (62.6)	1.75 (44.4)	2.00 (50.8)	1.19 (30.3)	0.28 (7.1)

NOTE:
❖ H is the dimension of mounting Holes.
❖ All dimensions are reference only and are subject to change. For dimensions not shown above, please contact the authorized representative of Fluidline Group.

How to Order

20RV— MPF9 — FNPT12 — 10 — A — 316

Series	Intel Type and Size	Outel Type and Size	Spring Designato	Adjustable	Body Material
20RV	MPF9 9/16 in.	FNPT12 3/4 in. Female NPT	5 1500-5000 psi 10 5000-10000 psi 20 10000-20000 psi	None A Adjustable	316 316 S.S.

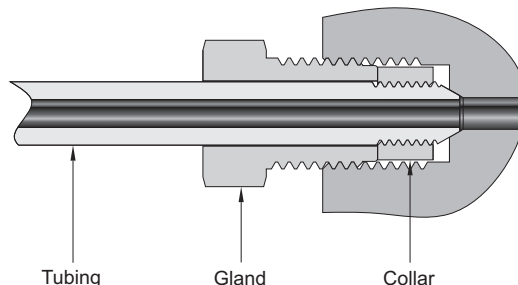
Medium Pressure Fittings, Nipples and Tubing

20 Series

Features

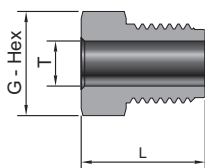
- ❖ Coned-and-Threaded Connection
- ❖ Available sizes are 1/4, 3/8, 9/16, 3/4, and 1 in.
- ❖ Working temperature from -423°F to 1200°F (-252°C to 649°C)
- ❖ Special 316 stainless steel and Alloy 826 material
- ❖ Anti-vibration connection components available

Fluidline 20 series medium pressure fittings are designed for use with 20 series medium pressure valves



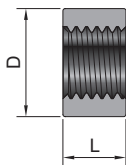
Dimensions

Glands



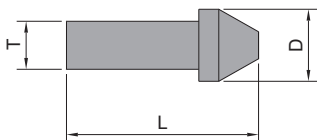
T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)	
		G	L
1/4	20G-MPF4-	0.50(12.7)	0.58(14.7)
3/8	20G-MPF6-	0.63(15.9)	0.73(18.5)
9/16	20G-MPF9-	0.94(23.8)	0.88(22.4)
3/4	20G-MPF12-	1.19(30.2)	1.00(25.4)
1	20G-MPF16-	1.38(34.9)	1.38(35.1)

Collars



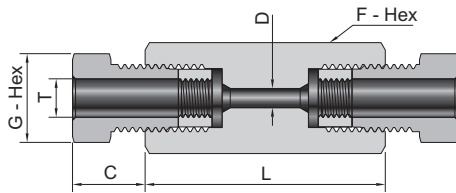
T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)	
		D	L
1/4	20C-MPF4-	0.38(9.7)	0.22(5.6)
3/8	20C-MPF6-	0.47(11.9)	0.25(6.4)
9/16	20C-MPF9-	0.72(18.3)	0.31(7.9)
3/4	20C-MPF12-	0.94(23.8)	0.37(9.4)
1	20C-MPF16-	1.25(31.8)	0.50(12.7)

Plugs



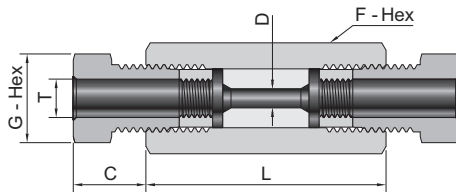
T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)	
		D	L
1/4	20P-MPF4-	0.38(9.7)	0.94(23.8)
3/8	20P-MPF6-	0.47(11.9)	1.18(30.0)
9/16	20P-MPF9-	0.72(18.3)	1.40(35.6)
3/4	20P-MPF12-	0.94(23.8)	1.69(42.9)
1	20P-MPF16-	1.25(31.8)	2.20(55.9)

Union Couplings



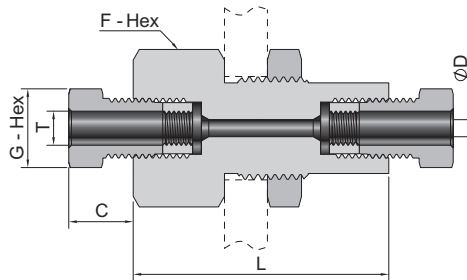
T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)				
		L	C	D	G	F
1/4	20U-MPF4-	1.62(41.1)	0.38(9.7)	0.11(2.8)	0.50(12.7)	0.63(15.9)
3/8	20U-MPF6-	1.75(44.5)	0.44(11.2)	0.20(5.1)	0.63(15.9)	0.75(19.1)
9/16	20U-MPF9-	2.12(53.9)	0.53(13.5)	0.31(7.9)	0.94(23.8)	1.00(25.4)
3/4	20U-MPF12-	2.50(63.5)	0.62(15.7)	0.44(11.1)	1.19(30.2)	1.38(34.9)
1	20U-MPF16-	3.50(88.9)	0.72(18.3)	0.56(14.3)	1.38(34.9)	1.75(44.5)

Union Couplings(Slip Type)



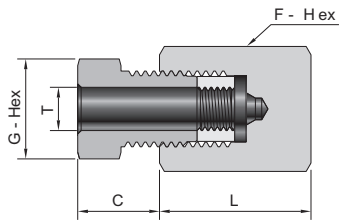
T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)				
		L	C	D	G	F
1/4	20SU-MPF4-	1.62(41.1)	0.38(9.7)	0.11(2.8)	0.50(12.7)	0.63(15.9)
3/8	20SU-MPF6-	1.75(44.5)	0.44(11.2)	0.20(5.1)	0.63(15.9)	0.75(19.1)
9/16	20SU-MPF9-	2.12(53.9)	0.53(13.5)	0.31(7.9)	0.94(23.8)	1.00(25.4)
3/4	20SU-MPF12-	2.50(63.5)	0.62(15.7)	0.44(11.1)	1.19(30.2)	1.38(34.9)
1	20SU-MPF16-	3.50(88.9)	0.72(18.3)	0.56(14.3)	1.38(34.9)	1.75(44.5)

Bulkhead Couplings



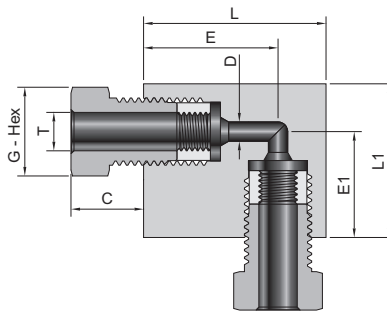
T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)						
		L	C	D	G	F	Panel Hole Size	Max. Panel Thickness
1/4	20BU-MPF4-	1.88(47.8)	0.38(9.7)	0.11(2.8)	0.50(12.7)	1.00(25.4)	0.81(20.6)	0.38(9.7)
3/8	20BU-MPF6-	2.00(50.8)	0.44(11.2)	0.20(5.1)	0.63(15.9)	1.06(27.0)	0.94(23.9)	0.38(9.7)
9/16	20BU-MPF9-	2.38(60.5)	0.53(13.5)	0.31(7.9)	0.94(23.8)	1.38(34.9)	1.13(28.6)	0.38(9.7)
3/4	20BU-MPF12-	2.62(66.5)	0.62(15.7)	0.44(11.1)	1.19(30.2)	1.88(47.6)	1.69(42.9)	0.38(9.7)
1	20BU-MPF16-	3.50(88.9)	0.72(18.3)	0.56(14.3)	1.38(34.9)	2.13(54.0)	1.94(49.3)	0.38(9.7)

Caps



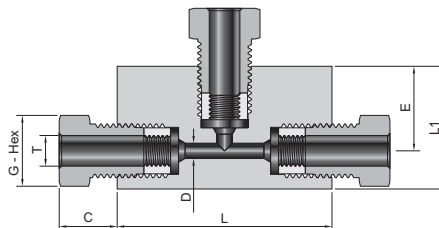
T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)			
		L	C	G	F
1/4	20CA-MPF4-	0.81(20.6)	0.38(9.7)	0.50(12.7)	0.63(15.9)
3/8	20CA-MPF6-	1.13(28.6)	0.44(11.2)	0.63(15.9)	0.75(19.1)
9/16	20CA-MPF9-	1.38(34.9)	0.53(13.5)	0.94(23.8)	1.00(25.4)
3/4	20CA-MPF12-	1.75(44.5)	0.62(15.7)	1.19(30.2)	1.38(34.9)
1	20CA-MPF16-	2.25(57.2)	0.72(18.3)	1.38(34.9)	1.75(44.5)

Elbows



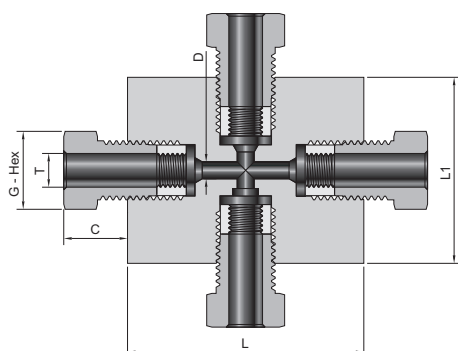
T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)							
		C	D	G	L	E	L1	E1	Thickness
1/4	20UE-MPF4-	0.38(9.7)	0.11(2.8)	0.50(12.7)	1.12(28.4)	0.75(19.1)	1.12(28.4)	0.75(19.1)	0.63(15.9)
3/8	20UE-MPF6-	0.44(11.2)	0.20(5.1)	0.63(15.9)	1.38(34.9)	1.00(25.4)	1.38(34.9)	1.00(25.4)	0.75(19.1)
9/16	20UE-MPF9-	0.53(13.5)	0.31(7.9)	0.94(23.8)	1.75(44.5)	1.25(31.8)	1.75(44.5)	1.25(31.8)	1.00(25.4)
3/4	20UE-MPF12-	0.62(15.7)	0.44(11.1)	1.19(30.2)	2.25(57.2)	1.50(38.1)	2.25(57.2)	1.50(38.1)	1.38(34.9)
1	20UE-MPF16-	0.72(18.3)	0.56(14.3)	1.38(34.9)	3.00(76.2)	2.06(52.3)	3.00(76.2)	2.06(52.3)	1.75(44.5)

Tees



T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)						
		C	D	G	L	L1	E	Thickness
1/4	20UT-MPF4-	0.38(9.7)	0.11(2.8)	0.50(12.7)	1.50(38.1)	1.12(28.4)	0.75(19.1)	0.63(15.9)
3/8	20UT-MPF6-	0.44(11.2)	0.20(5.1)	0.63(15.9)	2.00(50.8)	1.38(34.9)	1.00(25.4)	0.75(19.1)
9/16	20UT-MPF9-	0.53(13.5)	0.31(7.9)	0.94(23.8)	2.50(63.5)	1.75(44.5)	1.25(31.8)	1.00(25.4)
3/4	20UT-MPF12-	0.62(15.7)	0.44(11.1)	1.19(30.2)	3.00(76.2)	2.25(57.2)	1.50(38.1)	1.38(34.9)
1	20UT-MPF16-	0.72(18.3)	0.56(14.3)	1.38(34.9)	4.12(104.6)	3.00(76.2)	2.06(52.3)	1.75(44.5)

Crosses



T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)					
		C	D	G	L	L1	Thickness
1/4	20UC-MPF4-	0.38(9.7)	0.11(2.8)	0.50(12.7)	1.50(38.1)	1.50(38.1)	0.63(15.9)
3/8	20UC-MPF6-	0.44(11.2)	0.20(5.1)	0.63(15.9)	2.00(50.8)	2.00(50.8)	0.75(19.1)
9/16	20UC-MPF9-	0.53(13.5)	0.31(7.9)	0.94(23.8)	2.50(63.5)	2.50(63.5)	1.00(25.4)
3/4	20UC-MPF12-	0.62(15.7)	0.44(11.1)	1.19(30.2)	3.00(76.2)	3.00(76.2)	1.38(34.9)
1	20UC-MPF16-	0.72(18.3)	0.56(14.3)	1.38(34.9)	4.12(104.6)	4.12(104.6)	1.75(44.5)

How to Order

20U**MPF4****316**

Fitting Type	Port1/2/3/4 Type	Port1/2/3/4 Size	Material
20U Unions	MPF Medium Pressure Female	4 1/4 in.	316 316 S.S.
20RU Reducing Unions		6 3/8 in.	316L 316L S.S.
20BU Bulkhead Unions		9 9/16 in.	
20UE Unions Elbows		12 3/4 in.	
20UT Unions Tees		16 1 in.	
20UC Unions Crosses			
20CA Caps			
20P Plugs			
20G Gland			
20C Collars			

Tubing

Fluidline 20 series medium pressure tubing is manufactured specifically for high pressure applications
❖ 316 stainless steel



T-Tube O.D. in.	Wall Thickness in.	Material	Basic Ordering Number
1/4	0.070	316 S.S.	20FT-4-0.07-6M-
3/8	0.086	316 S.S.	20FT-6-0.086-6M-
9/16	0.125	316 S.S.	20FT-9-0.125-6M-
3/4	0.156	316 S.S.	20FT-12-0.156-6M-
1	0.219	316 S.S.	20FT-16-0.219-6M-

Pressure-Temperature Ratings

Tube O.D. in.	Working Pressure, psig(bar)				
	-423 to 100°F (-252 to 37.8°C)	200°F (93°C)	400°F (204°C)	600°F (316°C)	800°F (427°C)
1/4	20,000(1379)	20,000(1379)	19,250(1327)	18,050(1244)	16,800(1158)
3/8	20,000(1379)	20,000(1379)	19,250(1327)	18,050(1244)	16,800(1158)
9/16	20,000(1379)	20,000(1379)	19,250(1327)	18,050(1244)	16,800(1158)
3/4	20,000(1379)	20,000(1379)	19,250(1327)	18,050(1244)	16,800(1158)
1	20,000(1379)	20,000(1379)	19,250(1327)	18,050(1244)	16,800(1158)

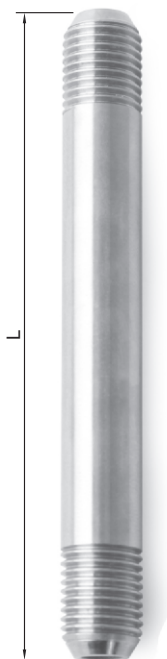
How to Order

20FT — 4 — 0.070 — 6M — TP316

Tubing Type	Tubing O.D. (in.)	Wall Thickness (in.)	Nominal Length (m/feet)	Material Grade
20FT 20 Series Fractional Tubing	4 1/4 in.	0.070	1M 1 meter	TP316
	6 3/8 in.	0.086	2M 2 metres	
	9 9/16 in.	0.125	3M 3 metres	
	12 3/4 in.	0.156	4M 4 metres	
	16 1 in.	0.219	5M 5 metres	
			6M 6 metres	
			10F 10 feet	
			20F 20 feet	

Coned and Threaded Nipples

Fluidline supplies pre-cut, coned-and-threaded nipples in various sizes and lengths for 20 series medium pressure valves and fittings



T-Tube O.D. in.	Tx-Tube I.D. in.	Basic Ordering Number	L in.(mm)
1/4	0.109	NIP-MPF4-2.75-	2.75(69.9)
1/4	0.109	NIP-MPF4-3-	3(76.2)
1/4	0.109	NIP-MPF4-4-	4(101.6)
1/4	0.109	NIP-MPF4-6-	6(152.4)
1/4	0.109	NIP-MPF4-8-	8(203.2)
1/4	0.109	NIP-MPF4-10-	10(254.0)
1/4	0.109	NIP-MPF4-12-	12(304.8)
3/8	0.203	NIP-MPF6-3-	3(76.2)
3/8	0.203	NIP-MPF6-4-	4(101.6)
3/8	0.203	NIP-MPF6-6-	6(152.4)
3/8	0.203	NIP-MPF6-8-	8(203.2)
3/8	0.203	NIP-MPF6-10-	10(254.0)
3/8	0.203	NIP-MPF6-12-	12(304.8)
9/16	0.312	NIP-MPF9-4-	4(101.6)
9/16	0.312	NIP-MPF9-6-	6(152.4)
9/16	0.312	NIP-MPF9-8-	8(203.2)
9/16	0.312	NIP-MPF9-10-	10(254.0)
9/16	0.312	NIP-MPF9-12-	12(304.8)
3/4	0.438	NIP-MPF12-4-	4(101.6)
3/4	0.438	NIP-MPF12-6-	6(152.4)
3/4	0.438	NIP-MPF12-8-	8(203.2)
3/4	0.438	NIP-MPF12-10-	10(254.0)
3/4	0.438	NIP-MPF12-12-	12(304.8)
1	0.562	NIP-MPF16-6-	6(152.4)
1	0.562	NIP-MPF16-8-	8(203.2)
1	0.562	NIP-MPF16-10-	10(254.0)
1	0.562	NIP-MPF16-12-	12(304.8)

How to Order

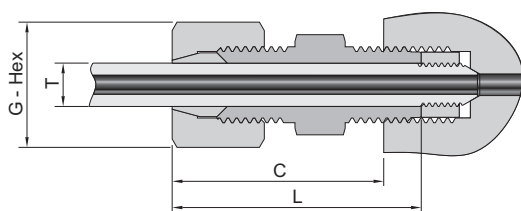
NIP — **MPF4** — **4** — **316**

Type	Connection Type	Connection Size	Nominal Length	Material
NIP Coned and Threaded Nipples	MPF Medium Pressure Fittings	4 1/4 in. 6 3/8 in. 9 9/16 in. 12 3/4 in. 16 1 in.	2.75 2.75" 3 3" 4 4" 6 6" 8 8" 10 10"	316 316 S.S.

Anti-Vibration Collet Gland Assemblies

- ❖ Anti-vibration collet gland assembly sizes from 1/4 to 1 in.(6.35 to 25.4 mm)
- ❖ Completely interchangeable with standard Fluidline 20 series medium pressure connections
- ❖ Moving the stress concentration back to the unthreaded part of the tubing and providing a wedge-typegripping action
- ❖ Anti-vibration collet gland assembly strengthens the entire structure

Typical 20 Series Anti-Vibration Collet Gland Assemblies



Dimensions

T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)		
		L	C	G
1/4	AVA-MPF4-	1.19(30.2)	0.94(23.8)	0.63(15.9)
3/8	AVA-MPF6-	1.50(38.1)	1.19(30.2)	0.81(20.6)
9/16	AVA-MPF9-	1.78(45.2)	1.41(35.8)	0.94(23.8)
3/4	AVA-MPF12-	2.00(50.8)	1.59(40.4)	1.25(31.8)
1	AVA-MPF16-	2.38(60.5)	1.69(42.9)	1.50(38.1)

How to Order

AVA

—

MPF4

— 316

Type	Connection Type	Connection Size	Material
AVA Anti-Vibration Collet Gland Assemblies	MPF Medium Pressure Fittings	4 1/4 in. 6 3/8 in. 9 9/16 in. 12 3/4 in. 16 1 in.	316 316 S.S.



Ultra-High Pressure

High Pressure Valves, Fittings and Tubing

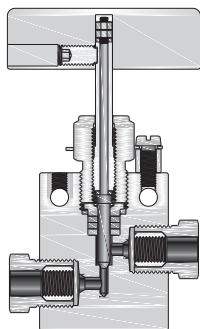
30000 & 60000 psig

30 and 60 Series

Contents

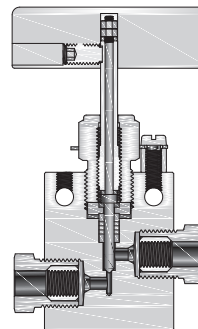
High Pressure Needle Valves (30NV Series)

12-62



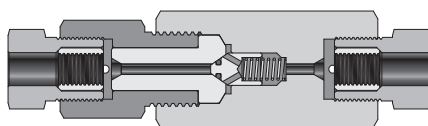
High Pressure Needle Valves (60NV Series)

12-67



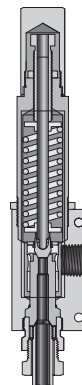
High Pressure Check Valves (60CV Series)

12-72



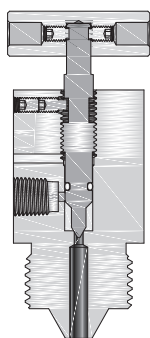
High Pressure Relief Valves (60RV Series)

12-74



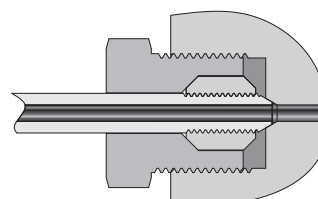
High Pressure Bleed Valve (30BP Series)

12-76



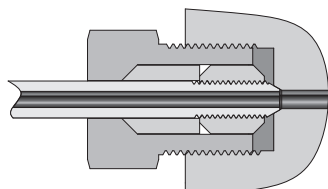
High Pressure Fittings, Tubing and Nipples (60 Series)

12-77



Anti-Vibration Collet Gland Assemblies (60 Series)

12-82



High Pressure Needle Valve

30NV Series

Features

- ❖ Tubing sizes available for 1/4", 3/8", 9/16"
- ❖ Non-rotating stem prevents stem/seat galling.
- ❖ 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 and provides dependable stem and body sealing
- ❖ Graphite packing temperature up to 800°F (427°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



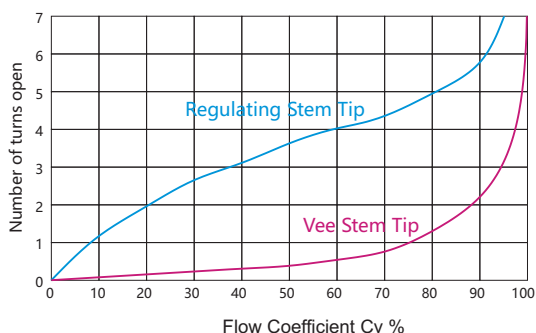
Technical Data

Tube OD in.	Connection Type	Orifice in.(mm)	Cv	Working Pressure psig(bar)
1/4	HPF4	0.094(2.39)	0.12	30,000(2068)
3/8	HPF6	0.125(3.18)	0.23	30,000(2068)
9/16	HPF9	0.125(3.18)	0.33	30,000(2068)

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 temperature
PTFE packing : -65°F (-53°C) to 450°F (232°C)
RPTFE glass packing : -65°F (-53°C) to 600°F (316°C)
Graphite packing : -65°F (-53°C) to 800°F (427°C)

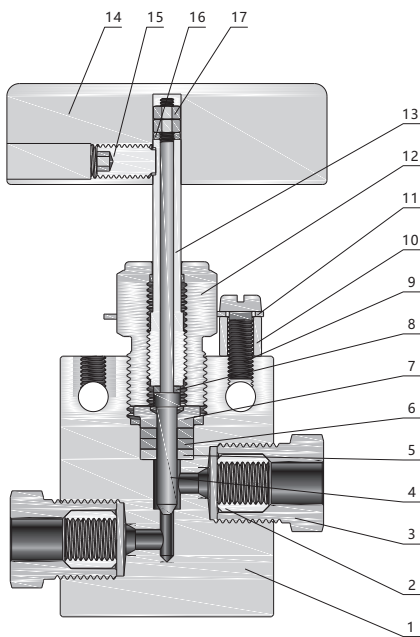
Flow Data at 100°F(38°C)



Pressure & Temperature

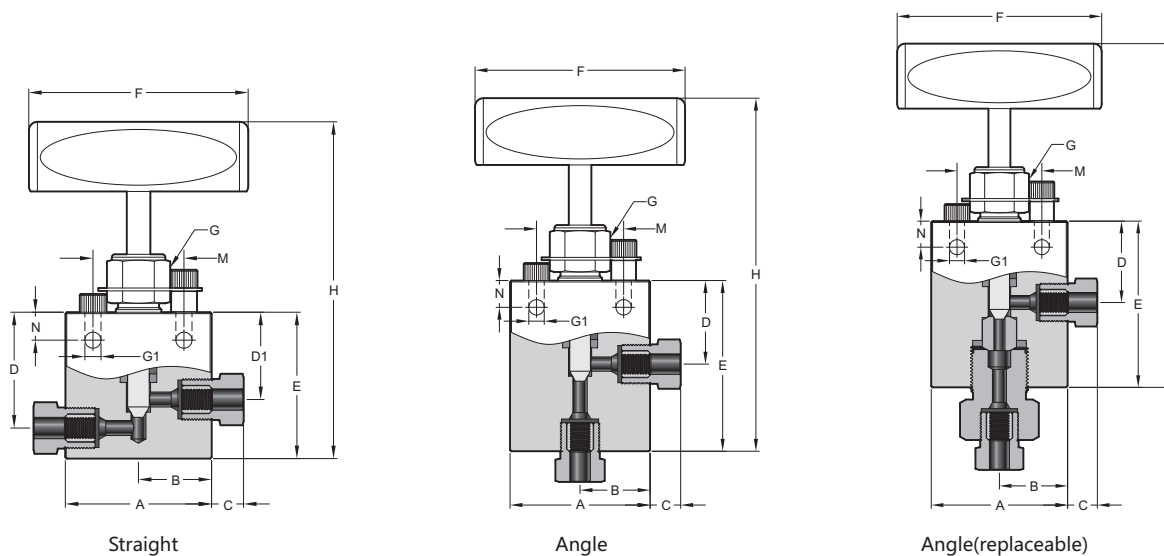
Temperature, °F(°C)	Working Pressure, psig(bar)
-65(-53)	30000(2068)
0(-18)	30000(2068)
100(37)	29700(2048)
200(93)	29500(2034)
300(148)	28800(1986)
400(204)	28200(1944)
500(260)	27300(1882)
600(316)	26700(1841)
700(371)	25900(1786)
800(427)	25200(1737)

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	630 S.S. / A564
5	Gland	316 S.S. / A479
6	Packing	PTFE / Graphite / RPTFE Glass
7	Packing ring	316 S.S. / A479
8	Gland	C63000 / B150
9	Screw	304 S.S.
10	Ring	304 S.S.
11	Lock plate	304 S.S.
12	Bonnet	C63000 / B150
13	Stem guard	316 S.S. / A479
14	Handle	303 S.S.
15	Screw	304 S.S.
16	Gland	C63000 / B150
17	Nut	304 S.S.

Dimensions



Dimensions(Straight)

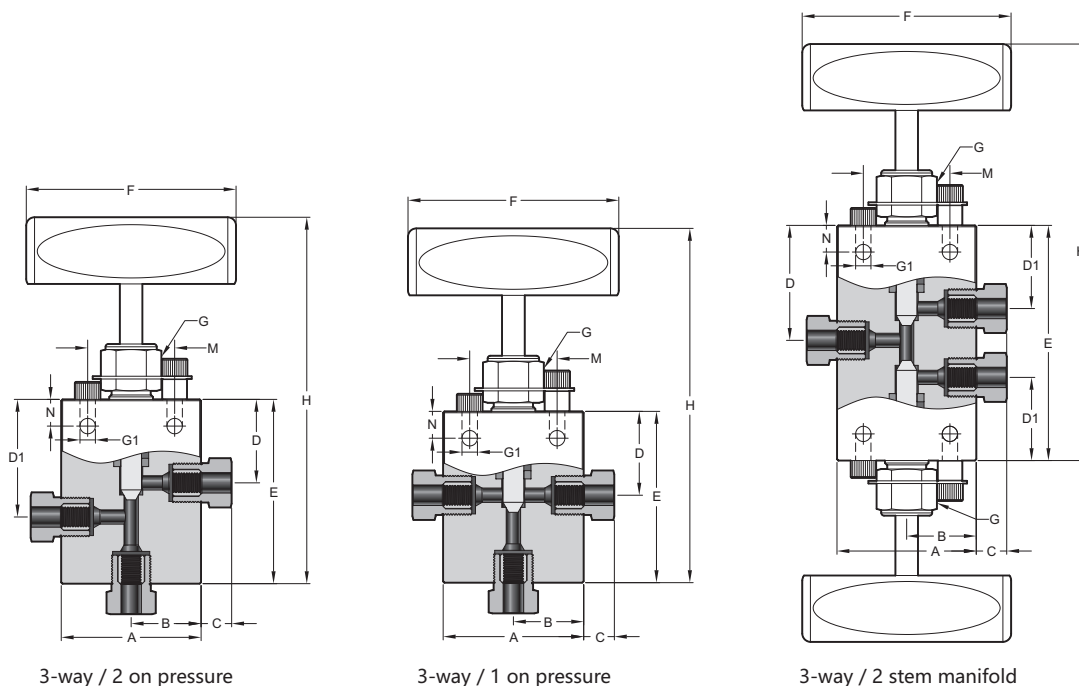
Basic Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
30NV-HPF4-	HPF4	0.094 (2.39)	2.00 (50.8)	1.00 (25.4)	0.50 (12.7)	1.50 (38.1)	1.12 (28.5)	2.00 (50.8)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.62 (117.4)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NV-HPF6-	HPF6	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.50 (38.1)	1.12 (28.5)	2.00 (50.8)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.68 (118.9)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NV-HPF9-	HPF9	0.125 (3.18)	2.62 (66.6)	1.31 (33.3)	0.81 (20.6)	1.56 (39.6)	1.12 (28.5)	2.44 (62.0)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.06 (128.5)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

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)												
30NV-HPF4-A-	HPF4	0.094 (2.39)	2.00 (50.8)	1.00 (25.4)	0.50 (12.7)	1.12 (28.5)	—	2.00 (50.8)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.62 (117.4)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NV-HPF6-A-	HPF6	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.12 (28.5)	—	2.13 (54.0)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.68 (118.9)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NV-HPF9-A-	HPF9	0.125 (3.18)	2.62 (66.6)	1.31 (33.3)	0.81 (20.6)	1.12 (28.5)	—	2.44 (62.0)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.06 (128.5)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

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)												
30NV-HPF4-AR-	HPF4	0.094 (2.39)	2.00 (50.8)	1.00 (25.4)	0.50 (12.7)	1.12 (28.5)	2.06 (52.3)	2.38 (60.5)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.80 (147.3)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NV-HPF6-AR-	HPF6	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.12 (28.5)	2.31 (58.67)	2.38 (60.5)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	6.05 (153.7)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NV-HPF9-AR-	HPF9	0.125 (3.18)	2.62 (66.6)	1.31 (33.3)	0.81 (20.6)	1.19 (30.2)	2.62 (66.6)	2.44 (62.0)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	6.45 (163.8)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)



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)												
30NV-HPF4-3A-	HPF4	0.094 (2.39)	2.00 (50.8)	1.00 (25.4)	0.50 (12.7)	1.50 (38.1)	1.12 (28.5)	2.12 (53.9)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.74 (120.4)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NV-HPF6-3A-	HPF6	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.50 (38.1)	1.12 (28.5)	2.50 (63.5)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.12 (130.1)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NV-HPF9-3A-	HPF9	0.125 (3.18)	2.62 (66.6)	1.31 (33.3)	0.81 (20.6)	1.56 (39.6)	1.12 (28.5)	2.88 (73.2)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.49 (139.5)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

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)												
30NV-HPF4-3B-	HPF4	0.094 (2.39)	2.00 (50.8)	1.00 (25.4)	0.50 (12.7)	1.12 (28.5)	—	2.00 (50.8)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.62 (117.4)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NV-HPF6-3B-	HPF6	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.12 (28.5)	—	2.00 (50.8)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.74 (120.4)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NV-HPF9-3B-	HPF9	0.125 (3.18)	2.62 (66.6)	1.31 (33.3)	0.81 (20.6)	1.12 (28.5)	—	2.44 (62.0)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.12 (130.1)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

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)												
30NV-HPF4-3C-	HPF4	0.094 (2.39)	2.00 (50.8)	1.00 (25.4)	0.50 (12.7)	1.53 (38.9)	1.12 (28.5)	3.06 (77.7)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.68 (144.3)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NV-HPF6-3C-	HPF6	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.62 (41.2)	1.12 (28.5)	3.25 (82.6)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.87 (149.1)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
30NV-HPF9-3C-	HPF9	0.125 (3.18)	2.62 (66.6)	1.31 (33.3)	0.81 (20.6)	1.88 (47.8)	1.12 (28.5)	3.75 (95.3)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	6.37 (161.8)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

Notes:

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

How to Order

30NV — HPF4 — R — G — A — 316L					
Series	Connector Sizes	Stem Tips	Packing	Flow Patterns	Body Material
30NV	HPF4 1/4 in.	Vee	PTFE	Straight	316 316 S.S.
	HPF6 3/8 in.	R Regulating	RG RPTFE Glass	A Angle	316L 316L S.S.
	HPF9 9/16 in.		G Graphite	AR Angle, replaceable seat	
				3A 3-way, 2 on pressure	
				3B 3-way, 1 on pressure	
				3C 3-way, 2 stem manifold	

High Pressure Needle Valve

60NV Series

Features

- ❖ Tubing sizes available for 1/4", 3/8", 9/16"
- ❖ Non-rotating stem prevents stem/seat galling
- ❖ 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 and provides dependable stem and body sealing
- ❖ 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 flow patterns are available



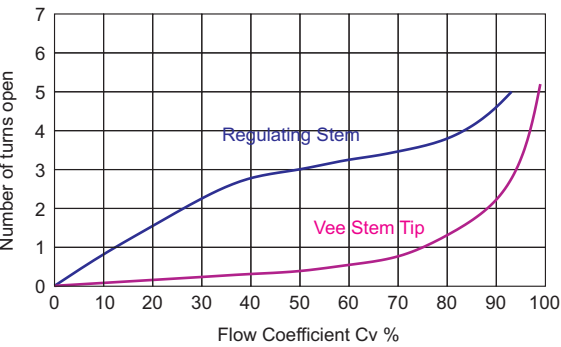
Technical Data

Tube OD in.	Connection Type	Orifice in.(mm)	Cv	Working Pressure psig(bar)
1/4	HPF4	0.063(1.59)	0.08	60,000(4137)
3/8	HPF6	0.063(1.59)	0.09	60,000(4137)
9/16	HPF9	0.078(1.98)	0.14	60,000(4137)

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 temperature
PTFE packing: -65°F (-53°C) to 450°F (232°C)
RPTFE glass packing: -65°F (-53°C) to 600°F (315°C)

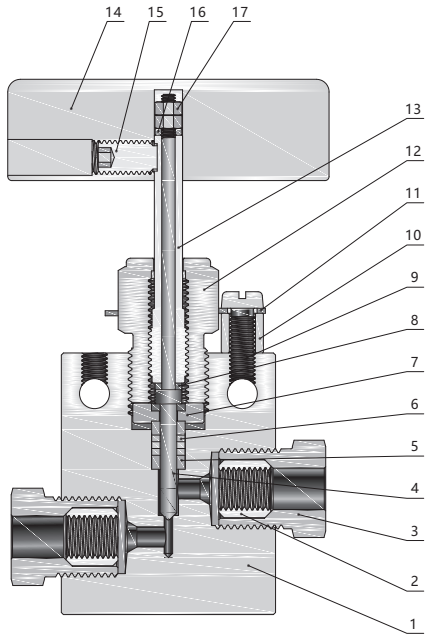
Flow Data at 100°F(38°C)



Pressure & Temperature

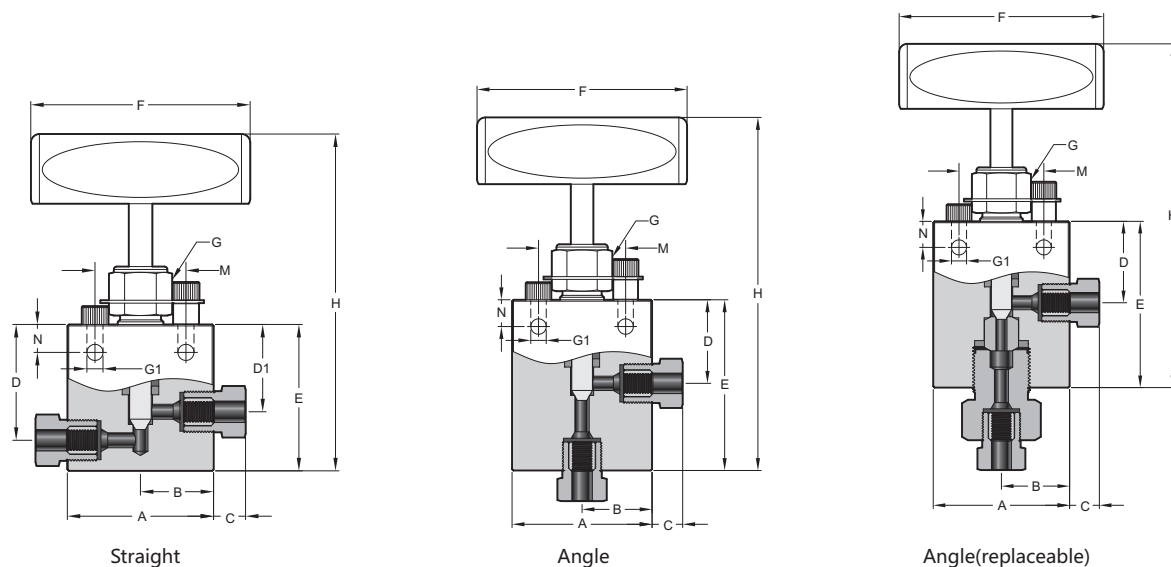
Temperature, °F(°C)	Working Pressure, psig(bar)
-65(-53)	60000(4137)
0(-18)	60000(4137)
100(37)	59400(4096)
200(93)	59100(4075)
300(148)	57600(3972)
400(204)	56400(3889)
500(260)	54900(3786)
600(315)	53400(3682)

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	630 S.S. / A564
5	Gland	316 S.S. / A479
6	Packing	PTFE / RPTFE
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	C63000 / B150
13	Stem guard	316 S.S. / A479
14	Handle	303 S.S.
15	Screw	304 S.S.
16	Gland	C63000 / B150
17	Nut	304 S.S.

Dimensions



Straight

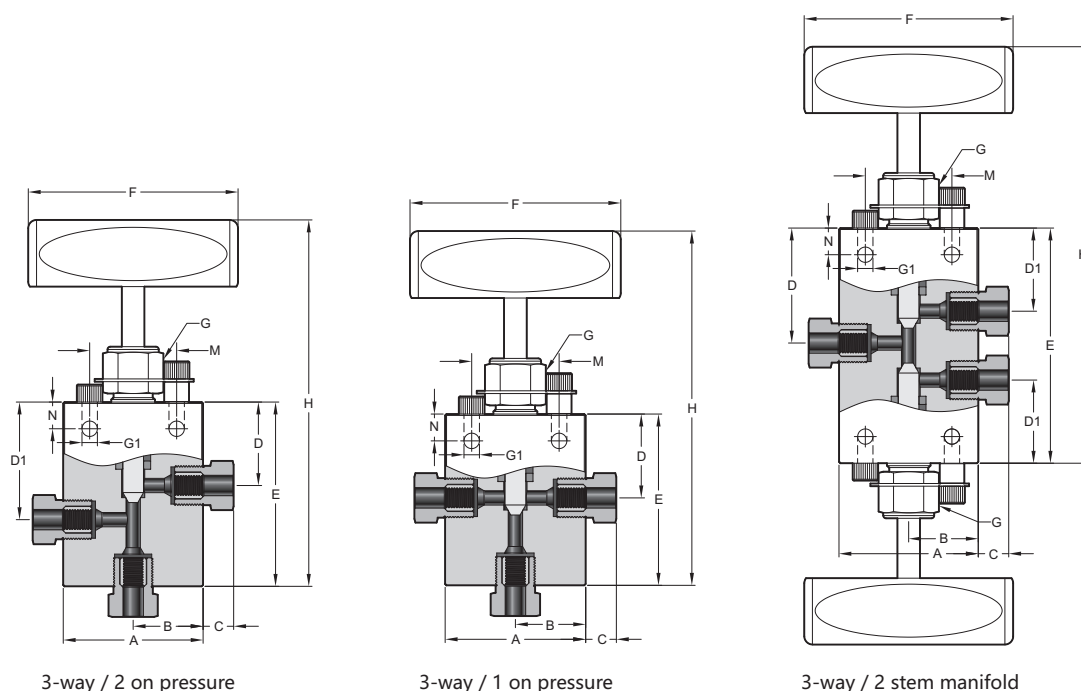
Basic Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
60NV-HPF4-	HPF4	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.50 (12.7)	1.69 (42.9)	1.31 (33.3)	2.13 (54.0)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.75 (120.7)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NV-HPF6-	HPF6	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.69 (42.9)	1.31 (33.3)	2.25 (57.2)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.75 (120.7)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NV-HPF9-	HPF9	0.078 (1.98)	2.62 (66.6)	1.31 (33.3)	0.72 (18.3)	1.75 (44.5)	1.31 (33.3)	2.50 (63.5)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.13 (130.3)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

Angle

Basic Ordering Number	Connection Type	Orifice in.(mm)	A	B	C	D	D1	E	F	G	G1	H	M	N	Thickness
			in.(mm)												
60NV-HPF4-A-	HPF4	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.50 (12.7)	1.31 (33.3)	—	2.38 (60.5)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.00 (127.0)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NV-HPF6-A-	HPF6	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.31 (33.3)	—	2.62 (66.6)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.25 (133.4)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NV-HPF9-A-	HPF9	0.078 (1.98)	2.62 (66.6)	1.31 (33.3)	0.72 (18.3)	1.31 (33.3)	—	2.81 (71.4)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.44 (138.2)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

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)												
60NV-HPF4-AR-	HPF4	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.50 (12.7)	1.31 (33.3)	2.12 (53.9)	2.62 (66.6)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	6.28 (159.5)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NV-HPF6-AR-	HPF6	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.31 (33.3)	2.36 (59.9)	2.62 (66.6)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	6.52 (165.6)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NV-HPF9-AR-	HPF9	0.078 (1.98)	2.62 (66.6)	1.31 (33.3)	0.72 (18.3)	1.31 (33.3)	2.68 (68.8)	2.62 (66.6)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	6.90 (175.3)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)



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)												
60NV-HPF4-3A-	HPF4	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.50 (12.7)	1.69 (42.9)	1.31 (33.3)	2.38 (60.5)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.75 (120.7)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NV-HPF6-3A-	HPF6	0.063 (1.59)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.69 (42.9)	1.31 (33.3)	2.75 (68.9)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	4.87 (123.7)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NV-HPF9-3A-	HPF9	0.078 (1.98)	2.62 (66.6)	1.31 (33.3)	0.72 (18.3)	1.75 (44.5)	1.31 (33.3)	3.03 (77.0)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.13 (130.3)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

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)												
60NV-HPF4-3B-	HPF4	0.094 (2.39)	2.00 (50.8)	1.00 (25.4)	0.50 (12.7)	1.31 (33.3)	—	2.38 (60.5)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.00 (127.0)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NV-HPF6-3B-	HPF6	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.31 (33.3)	—	2.62 (66.6)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	5.25 (133.4)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NV-HPF9-3B-	HPF9	0.125 (3.18)	2.62 (66.6)	1.31 (33.3)	0.72 (18.3)	1.31 (33.3)	—	2.81 (71.4)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	5.44 (138.2)	0.69 (17.5)	0.38 (9.7)	1.50 (38.1)

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)												
60NV-HPF4-3C-	HPF4	0.094 (2.39)	2.00 (50.8)	1.00 (25.4)	0.50 (12.7)	1.72 (43.69)	1.31 (33.3)	3.44 (87.4)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	6.07 (154.2)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NV-HPF6-3C-	HPF6	0.125 (3.18)	2.00 (50.8)	1.00 (25.4)	0.53 (13.5)	1.88 (47.8)	1.31 (33.3)	3.75 (95.3)	3.00 (76.2)	1.00 (25.4)	0.22 (5.6)	6.37 (161.8)	0.69 (17.5)	0.38 (9.7)	1.00 (25.4)
60NV-HPF9-3C-	HPF9	0.125 (3.18)	2.62 (66.6)	1.31 (33.3)	0.72 (18.3)	2.06 (52.3)	1.31 (33.3)	4.12 (104.7)	3.00 (76.2)	1.00 (25.4)	0.28 (7.1)	6.37 (161.8)	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. The dimension of stem in closed position

How to Order

60NV	—	HPF4	—	R	—	RG	—	3A	—	316
Series	Connector Sizes		Stem Tips	Packing		Flow Patterns			Body Material	
60NV	HPF4 1/4 in.		Vee	PTFE		Straight			316 316 S.S.	
	HPF6 3/8 in.		R Regulating	RG RPTFE Glass		A Angle			A825 Alloy 825	
	HPF9 9/16 in.					AR Angle, replaceable seat				
						3A 3-way, 2 on pressure				
						3B 3-way, 1 on pressure				
						3C 3-way, 2 stem manifold				

High Pressure Check Valve

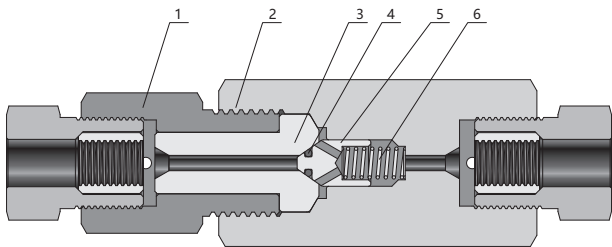
O-ring Check Valves

Features

- ❖ Maximum working pressure up to 60,000 psi(4137 bar)
- ❖ Working temperature from 0°F to 400°F(-18°C to 204°C)
- ❖ Cracking Pressure: 14 psi ~ 26 psi(0.966 bar ~ 1.794 bar)
- ❖ Tubing sizes available for 1/4",3/8",9/16"
- ❖ Provides unidirectional flow and tight shut-off for liquids and gases with high reliability.
When differential drops below cracking pressure, valve shuts off(Not for use as relief valve)
- ❖ Resilient O-ring seat design for noise-free closing and zero leakage

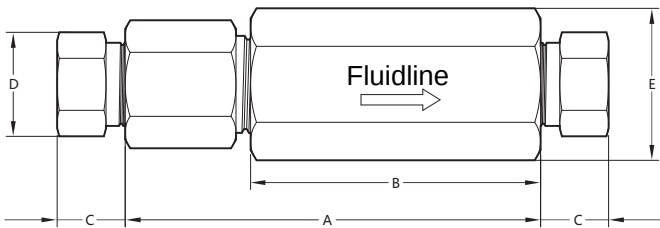


Standard Materials of Construction



Item	Component	Material Grade / ASTM Specification
1	Cover Gland	316 S.S. / A479
2	Valve Body	316 S.S. / A479
3	Cover	316 S.S. / A479
4	O-ring	FKM
5	Poppet	316 S.S. / A479
6	Spring	300 Series Stainless Steel

Dimensions



Ordering Number	Connection Type	Orifice in.(mm)	Cv	A	B	C	D-Hex	E-Hex
60CV-HPF4-V-	HPF4	0.094(2.39)	0.15	3.38(85.85)	2.50(63.50)	0.50(12.70)	0.63(16.00)	1.18(30.00)
60CV-HPF6-V-	HPF6	0.125(3.18)	0.28	3.75(95.25)	2.62(66.55)	0.53(13.46)	0.75(19.05)	1.18(30.00)
60CV-HPF9-V-	HPF9	0.187(4.75)	0.63	4.62(117.35)	3.38(85.85)	0.81(20.57)	1.12(28.45)	1.50(38.10)

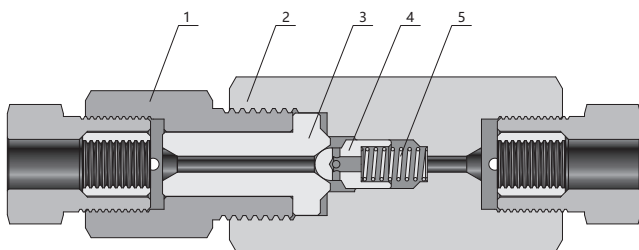
❖ All dimensions for reference only and subject to change.

Ball Check Valves

Features

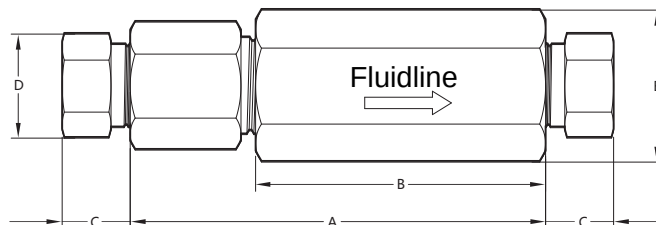
- ❖ Maximum working pressure up to 60,000 psi(4137 bar)
- ❖ Working temperature from -110°F to 1200°F(-79°C to 649°C)
- ❖ Cracking Pressure:14 psi ~ 26 psi(0.966 bar ~ 1.794 bar)
- ❖ Tubing sizes available for 1/4",3/8",9/16"
- ❖ Prevents reverse flow where leak-tight shut-off is not mandatory(Not for use as relief valve)
- ❖ An integral design of the ball and poppet to assure positive, in-line seating without "chatter".
Poppet designed essentially for axial flow with minimum pressure drop
- ❖ Optional wet cap gland and ball cone material for longer service life

Standard Materials of Construction



Item	Component	Material Grade / ASTM Specification
1	Cover Gland	316 S.S. / A479
2	Valve Body	316 S.S. / A479
3	Cover	316 S.S. / A479
4	Poppet	316 S.S. / A479
5	Spring	300 Series Stainless Steel

Dimensions



Ordering Number	Connection Type	Orifice in.(mm)	Cv	A	B	C	D-Hex	E-Hex
60CV-HPF4-B-	HPF4	0.094(2.39)	0.15	3.38(85.85)	2.50(63.50)	0.50(12.70)	0.63(16.00)	1.18(30.00)
60CV-HPF6-B-	HPF6	0.125(3.18)	0.28	3.75(95.25)	2.62(66.55)	0.53(13.46)	0.75(19.05)	1.18(30.00)
60CV-HPF9-B-	HPF9	0.187(4.75)	0.63	4.62(117.35)	3.38(85.85)	0.81(20.57)	1.12(28.45)	1.50(38.10)

❖ All dimensions for reference only and subject to change.

How to Order

60CV — HPF4 — B — 316L

Series	Connection Size	Seal Type	Seal material	Body Material
60CV	HPF4 1/4 in.	V Blunt	Fluorocarbon FKM	316 316 S.S.
	HPF6 3/8 in.	B Ball	BN Buna N	
	HPF9 9/16 in.		E Ethylene Propylene	
			N Neoprene	
			Z Kalrez	

High Pressure Relief Valve

60RV Series

Features

- ❖ Soft seat relief valves.
- ❖ Set pressure: 20000 to 60000 psig(1379 to 4137 bar)
- ❖ Working temperature: -110°F to 500°F(-79°C to 260°C)
- ❖ Liquid or gas service. Provide bubble tight shut-off of gas
- ❖ Pressure settings are made at the factory and valves are tagged accordingly
State the required set pressure with the order please
- ❖ Lock wired secure cap to maintain set pressure
- ❖ Easily exchangeable seat
- ❖ Free assembly positions



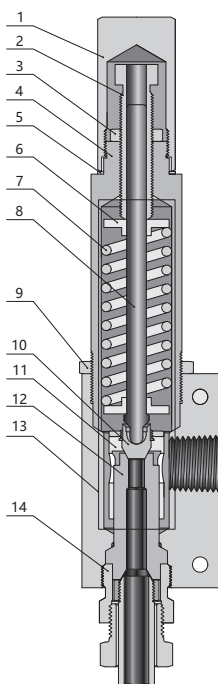
Technical Data

Ordering Number	Inlet		Outlet Connection Type	Orifice Size in.(mm)	Cv	Pressure Rating psig(bar)@100°F(38°C)		
	Tube OD in.	Connection Type				Minimum Set Pressure	Maximum Set Pressure	Maximum Back Pressure
60RV-HPF6-FNPT12-30-	3/8	HPF6	FNPT12	0.125(3.18)	0.2	20,000(1379)	30,000(2068)	500(34.5)
60RV-HPF6-FNPT12-45-	3/8	HPF6	FNPT12	0.093(2.36)	0.1	25,000(1724)	45,000(3103)	500(34.5)
60RV-HPF6-FNPT12-60-	3/8	HPF6	FNPT12	0.078(1.98)	0.07	30,000(2068)	60,000(4137)	500(34.5)

NOTE:

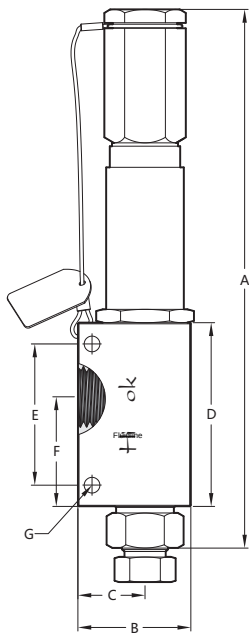
- ❖ Maximum system operating pressure should not exceed 90% of relief valve set pressure.

Standard Materials of Construction



Item	Component	Valve Material
1	Cap	316 S.S. / A479
2	Adjusting Bolt	316 S.S. / A479
3	Lock Nut	316 S.S. / A479
4	Spring Cylinder	316 S.S. / A479
5	Gasket	316L S.S. / A276
6	Spring Washer	316 S.S. / A479
7	Spring	17-7PH/AMS5678
8	Spindle	316 S.S. / A479
9	Lock Nut	316 S.S. / A276
10	Plug	630 S.S./ A564
11	Plug Guide	316 S.S. / A479
12	Seat	17-4PH / A564
13	Valve Body	316 S.S. / A479
14	Seat Gland	316 S.S. / A479
Lubricant		Molybdenum Disulfide

Dimensions



Relief Valves Dimensions

A	B	C	D	E	F	G
in.(mm)						
9.46 (240.4)	2.00 (50.8)	1.19 (30.2)	3.25 (82.6)	2.25 (57.1)	1.94 (49.3)	0.28 (7.1)

NOTE:
❖ G is the dimension of Mounting Holes.
❖ All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or Fluidline Group.

How to Order

60RV— HPF6 — FNPT12 — 60 — 316				
Series	Intel Type and Size	Outel Type and Size	Spring Designato	Body Material
60RV	HPF6 3/8 in.	FNPT12 3/4 in. Female NPT	30 20000-30000 psi 45 30000-45000 psi 60 45000-60000 psi	316 316 S.S.

High Pressure Bleed Valve

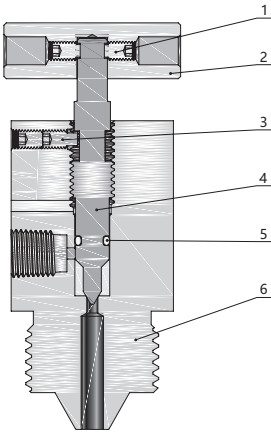
30BP Series

Features

- ❖ Maximum working pressure up to 30,000 psig (2068 bar)
- ❖ Working temperature from 0°F to 400°F (-18°C to 204°C)
- ❖ One piece hex construction compact design allows easy installation.
- ❖ Easy to assemble and replace O-ring.
- ❖ Positive locking screw design prevents accidental removal of the stem.
- ❖ Tee handle for easy operation.
- ❖ 1/8" Female NPT outlet connection.

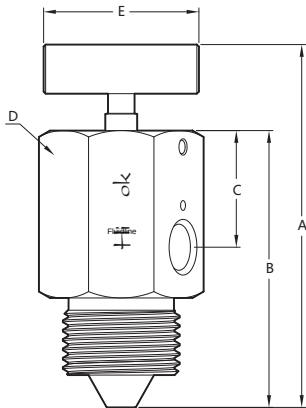


Standard Materials of Construction



Item	Component	Material Grade / ASTM Specification
1	Screw	stainless steel
2	Handle	303 S.S
3	Screw	stainless steel
4	Stem	630 S.S.
5	O-ring	Fluorocarbon FKM
6	Body	316 S.S. / A479

Dimensions



Ordering Number	Connection Type(Inlet)	Connection Type(Outlet)	Orifice in.(mm)	A	B	C	D	E
30BP-HPF6-	HPF6	FNPT2	0.094 (2.4)	3.41 (86.7)	2.58 (65.6)	1.18 (30.0)	1.37 (34.9)	1.75 (44.5)
30BP-HPF9-	HPF9							

Note:
❖ D is the dimension of hex.
❖ A is the dimension of stem in closed position.
❖ All dimensions are for reference only and are subject to change. For dimensions not shown above, please contact the authorized representative or Fluidline Group.

How to Order

30BP — HPF6 — 316

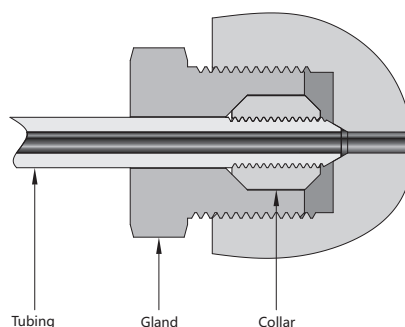
Series	Connector Sizes	Body Material
30BP	HPF6 3/8 in.	316 316 S.S.
	HPF9 9/16 in.	

High Pressure Fittings Nipples and Tubing

60 Series

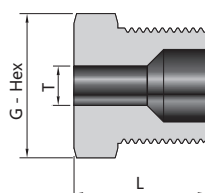
Features

- ❖ Coned-and-Threaded Connection
 - ❖ Available sizes are 1/4, 3/8, 9/16 and 1 in.
 - ❖ Working pressure:
 1/4, 3/8 and 9/16 in: 60000 psi(4136 bar)
 1 in: 43000 psi(2964.7 bar)
 - ❖ Working temperature from -423°F to 1200°F (-252°C to 649°C)
 - ❖ Special 316 stainless steel and Alloy 826 material
 - ❖ Anti-vibration connection components available
- Fluidline 60 series high pressure fittings are designed for use with 30 and 60 series high pressure valves



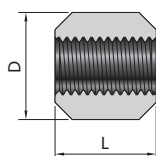
Dimensions

Glands



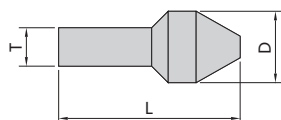
T-Tube O.D. in.	Ordering Number	Dimensions, in.(mm)	
		G	L
1/4	60G-HPF4-	0.63(15.9)	0.82(20.8)
3/8	60G-HPF6-	0.81(20.6)	1.13(28.7)
9/16	60G-HPF9-	1.19(30.2)	1.50(38.1)
1	60G-HPF16-	1.38(34.9)	1.38(34.9)

Collars



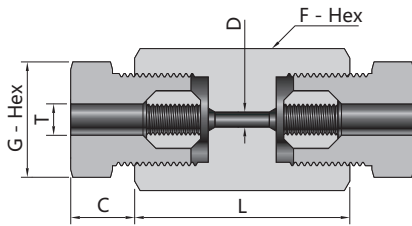
T-Tube O.D. in.	Ordering Number	Dimensions, in.(mm)	
		D	L
1/4	60C-HPF4-	0.38(9.6)	0.38(9.6)
3/8	60C-HPF6-	0.50(12.7)	0.54(13.7)
9/16	60C-HPF9-	0.81(20.6)	0.62(15.8)
1	60C-HPF16-	1.25(31.8)	0.62(15.8)

Plugs



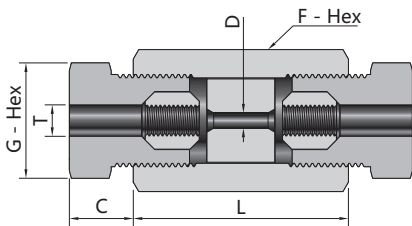
T-Tube O.D. in.	Ordering Number	Dimensions, in.(mm)	
		D	L
1/4	60P-HPF4-	0.38(9.6)	1.04(26.4)
3/8	60P-HPF6-	0.50(12.7)	1.35(34.3)
9/16	60P-HPF9-	0.81(20.6)	1.89(48.0)
1	60P-HPF16-	1.25(31.8)	2.37(60.2)

Union Couplings



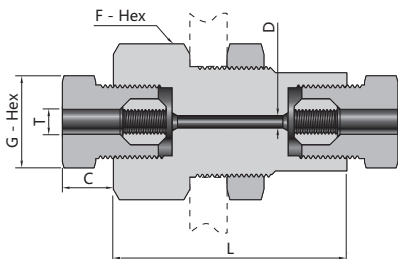
T-Tube O.D. in.	Ordering Number	Dimensions, in.(mm)				
		L	C	D	G	F
1/4	60U-HPF4-	1.38(34.9)	0.50(12.7)	0.09(2.3)	0.63(15.9)	0.75(19.1)
3/8	60U-HPF6-	1.75(44.5)	0.53(13.5)	0.13(3.3)	0.81(20.6)	1.00(25.4)
9/16	60U-HPF9-	2.19(55.6)	0.81(20.6)	0.19(4.8)	1.19(30.2)	1.38(34.9)
1	60U-HPF16-	3.50(88.9)	0.72(18.3)	0.44(11.1)	1.38(34.9)	1.75(44.5)

Union Couplings(Slip Type)



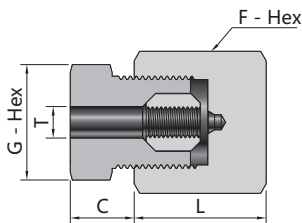
T-Tube O.D. in.	Ordering Number	Dimensions, in.(mm)				
		L	C	D	G	F
1/4	60SU-HPF4-	1.38(34.9)	0.50(12.7)	0.09(2.3)	0.63(15.9)	0.75(19.1)
3/8	60SU-HPF6-	1.75(44.5)	0.53(13.5)	0.13(3.3)	0.81(20.6)	1.00(25.4)
9/16	60SU-HPF9-	2.19(55.6)	0.81(20.6)	0.19(4.8)	1.19(30.2)	1.38(34.9)
1	60SU-HPF16-	3.50(88.9)	0.72(18.3)	0.44(11.1)	1.38(34.9)	1.75(44.5)

Bulkhead Couplings



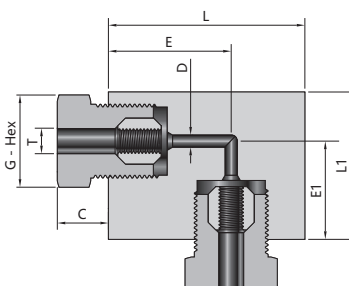
T-Tube O.D. in.	Ordering Number	Dimensions, in.(mm)						
		L	C	D	G	F	Panel Hole Size	Max. Panel Thickness
1/4	60BU-HPF4-	1.88(47.8)	0.50(12.7)	0.09(2.3)	0.63(15.9)	1.06(27.0)	0.94(23.9)	0.38(9.7)
3/8	60BU-HPF6-	2.38(60.5)	0.53(13.5)	0.13(3.3)	0.81(20.6)	1.38(34.9)	1.13(28.6)	0.38(9.7)
9/16	60BU-HPF9-	2.75(69.9)	0.81(20.6)	0.19(4.8)	1.19(30.2)	1.88(47.6)	1.69(42.9)	0.38(9.7)
1	60BU-HPF16-	3.50(88.9)	0.72(18.3)	0.44(11.1)	1.38(34.9)	2.13(54.0)	1.94(49.3)	0.50(12.7)

Caps



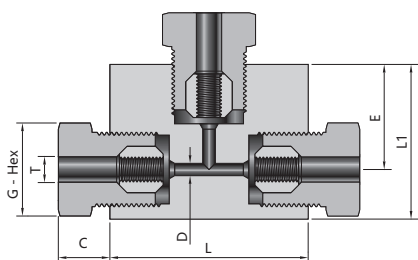
T-Tube O.D. in.	Ordering Number	Dimensions, in.(mm)			
		L	C	G	F
1/4	60CA-HPF4-	0.75(19.1)	0.50(12.7)	0.63(15.9)	0.75(19.1)
3/8	60CA-HPF6-	1.13(28.6)	0.53(13.5)	0.81(20.6)	1.00(25.4)
9/16	60CA-HPF9-	1.38(34.9)	0.81(20.6)	1.19(30.2)	1.38(34.9)
1	60CA-HPF16-	2.25(57.2)	0.72(18.3)	1.38(34.9)	1.75(44.5)

Elbows



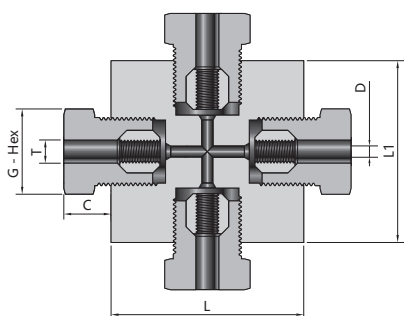
T-Tube O.D. in.	Ordering Number	Dimensions, in.(mm)							
		C	D	G	L	E	L1	E1	Thickness
1/4	60UE-HPF4-	0.50(12.7)	0.09(2.3)	0.63(15.9)	1.50(38.1)	0.88(22.4)	1.00(25.4)	0.62(15.7)	0.75(19.1)
3/8	60UE-HPF6-	0.53(13.5)	0.13(3.3)	0.81(20.6)	2.00(50.8)	1.25(31.8)	1.50(38.1)	1.00(25.4)	1.00(25.4)
9/16	60UE-HPF9-	0.81(20.6)	0.19(4.8)	1.19(30.2)	2.62(66.5)	1.88(47.8)	1.88(47.8)	1.12(28.4)	1.50(38.1)
1	60UE-HPF16-	0.72(18.3)	0.44(11.1)	1.38(34.9)	3.00(76.2)	2.06(52.3)	3.00(76.2)	2.06(52.3)	1.75(44.5)

Tees



T-Tube O.D. in.	Ordering Number	Dimensions, in.(mm)						
		C	D	G	L	L1	E	Thickness
1/4	60UT-HPF4-	0.50(12.7)	0.09(2.3)	0.63(15.9)	2.00(50.8)	1.25(31.8)	0.88(22.4)	0.75(19.1)
3/8	60UT-HPF6-	0.53(13.5)	0.13(3.3)	0.81(20.6)	2.00(50.8)	1.56(39.6)	1.06(26.9)	1.00(25.4)
9/16	60UT-HPF9-	0.81(20.6)	0.19(4.8)	1.19(30.2)	2.62(66.5)	2.12(53.8)	1.38(35.0)	1.50(38.1)
1	60UT-HPF16-	0.72(18.3)	0.44(11.1)	1.38(34.9)	4.12(104.6)	3.00(76.2)	2.06(52.3)	1.75(44.5)

Crosses



T-Tube O.D. in.	Ordering Number	Dimensions, in.(mm)						
		C	D	G	L	L1	Thickness	
1/4	60UC-HPF4-	0.50(12.7)	0.09(2.3)	0.63(15.9)	2.00(50.8)	1.25(31.8)	0.75(19.1)	
3/8	60UC-HPF6-	0.53(13.5)	0.13(3.3)	0.81(20.6)	2.00(50.8)	2.12(53.8)	1.00(25.4)	
9/16	60UC-HPF9-	0.81(20.6)	0.19(4.8)	1.19(30.2)	2.62(66.5)	2.75(69.9)	1.50(38.1)	
1	60UC-HPF16-	0.72(18.3)	0.44(11.1)	1.38(34.9)	4.12(104.6)	4.12(104.6)	1.75(44.5)	

How to Order

60U

—

HPF4

—

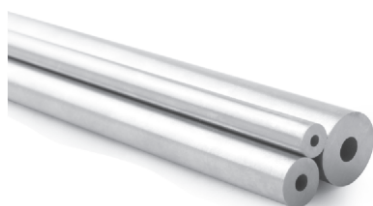
316

Fitting Type	Port1/2/3/4 Type	Port1/2/3/4 Size	Material
60U Unions	HPF High Pressure Female	4 1/4 in.	316 316 S.S.
60RU Reducing Unions		6 3/8 in.	316L 316L S.S.
60BU Bulkhead Unions		9 9/16 in.	
60UE Unions Elbows		16 1 in.	
60UT Unions Tees			
60UC Unions Crosses			
60CA Caps			
60P Plugs			
60G Gland			
60C Collars			

60 Series Tubing

Features

- ❖ Working pressure:
 1/4, 3/8 and 9/16 in: 60000 psi(4136 bar)
 1 in: 43000 psi(2964.7 bar)
- ❖ 316 stainless steel are standard materials. Other materials are available upon request
- ❖ Material, size and heat code are indicated on the tubing surface



T-Tube O.D. in.	Tx-Tube I.D. in.	Material	Basic Ordering Number
1/4	0.083	316S	FT-4-0.083-6M-
3/8	0.125	316S	FT-6-0.125-6M-
9/16	0.188	316S	FT-9-0.188-6M-
1	0.281	316S	FT-16-0.281-6M-

Working Pressure

T-Tube O.D. in.	Working Pressure, psig(bar)				
	-423 to 100°F (-252 to 37.8°C)	200°F (93°C)	400°F (204°C)	600°F (316°C)	800°F (427°C)
1/4	60000(4137)	60000(4137)	57750(3982)	54250(3740)	50700(3496)
3/8	60000(4137)	60000(4137)	57750(3982)	54250(3740)	50700(3496)
9/16	60000(4137)	60000(4137)	57750(3982)	54250(3740)	50700(3496)
1	43000(2964.7)	43000(2964.7)	43000(2964.7)	41380(2853)	36330(2504.8)

How to Order

60FT — 4 — 0.083 — 6M — TP316

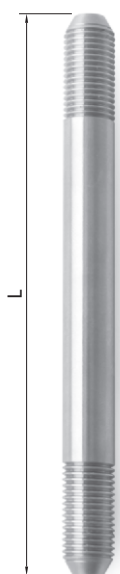
Tubing Type	Tubing O.D. (in.)	Wall Thickness (in.)	Nominal Length (m/feet)	Material Grade
60FT 60 Series Fractional Tubing	4 1/4 in.	0.083	1M 1 meter	TP316
	6 3/8 in.	0.125	2M 2 metres	
	9 9/16 in.	0.188	3M 3 metres	
	16 1 in.	0.281	4M 4 metres	
			5M 5 metres	
			6M 6 metres	
			10F 10 feet	
			20F 20 feet	

Coned and Threaded Nipples

Features

Fluidline supplies precut, coned-and-threaded nipples in various sizes and lengths for 60 series high pressure valves and fittings

Dimensions



Coned and Threaded Nipples

T-Tube O.D. in.	Tx-Tube I.D. in.	Ordering Number	L in.(mm)
1/4	0.083	NIP-HPF4-2.75	2.75(69.9)
1/4	0.083	NIP-HPF4-3	3(76.2)
1/4	0.083	NIP-HPF4-4	4(101.6)
1/4	0.083	NIP-HPF4-6	6(152.4)
1/4	0.083	NIP-HPF4-8	8(203.2)
1/4	0.083	NIP-HPF4-10	10(254.0)
1/4	0.083	NIP-HPF4-12	12(304.8)
3/8	0.125	NIP-HPF6-3	3(76.2)
3/8	0.125	NIP-HPF6-4	4(101.6)
3/8	0.125	NIP-HPF6-6	6(152.4)
3/8	0.125	NIP-HPF6-8	8(203.2)
3/8	0.125	NIP-HPF6-10	10(254.0)
3/8	0.125	NIP-HPF6-12	12(304.8)
9/16	0.188	NIP-HPF9-4	4(101.6)
9/16	0.188	NIP-HPF9-6	6(152.4)
9/16	0.188	NIP-HPF9-8	8(203.2)
9/16	0.188	NIP-HPF9-10	10(254.0)
9/16	0.188	NIP-HPF9-12	12(304.8)
1	0.281	NIP-HPF16-4	4(101.6)
1	0.281	NIP-HPF16-6	6(152.4)
1	0.281	NIP-HPF16-8	8(203.2)
1	0.281	NIP-HPF16-10	10(254.0)
1	0.281	NIP-HPF16-12	12(304.8)

How to Order

NIP — **HPF4** — **4** — **316**

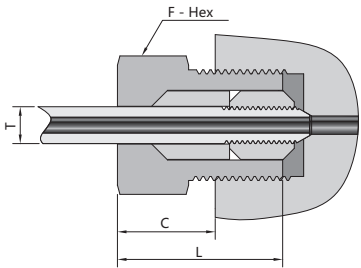
Type	Connection Type	Connection Size	Nominal Length	Material
NIP Coned and Threaded Nipples	HPF High Pressure Fittings	4 1/4 in. 6 3/8 in. 9 9/16 in. 16 1 in.	2.75 2.75" 3 3" 4 4" 6 6" 8 8" 10 10"	316 316 S.S.

Anti-Vibration Collet Gland Assemblies

Typical 60 Series anti-vibration collet gland assembly

Features

- ❖ Anti-vibration collet gland assembly sizes from 1/4, 3/8, 9/16 and 1 in.
- ❖ Completely interchangeable with standard Fluidline 60 series high pressure connections
- ❖ Moving the stress concentration back to the unthreaded part of the tubing and providing a wedge-typegripping action
- ❖ Anti-vibration collet gland assembly strengthens the entire structure



Dimensions

T-Tube O.D. in.	Basic Ordering Number	Dimensions, in.(mm)		
		L	C	F
1/4	AVA-HPF4-	0.81(20.6)	0.50(12.7)	0.63(15.9)
3/8	AVA-HPF6-	1.12(28.4)	0.62(15.7)	0.81(20.6)
9/16	AVA-HPF9-	1.50(38.1)	1.00(25.4)	1.19(30.2)
1	AVA-HPF16-	2.38(60.5)	1.69(42.9)	1.50(38.1)

How to Order

AVA — HPF4 — 316			
Type	Connection Type	Connection Size	Material
AVA Anti-Vibration Collet Gland Assemblies	HPF High Pressure Fittings	4 1/4 in.	316 316 S.S.
		6 3/8 in.	
		9 9/16 in.	
		16 1 in.	



Ultra-High Pressure

Ultra High Pressure Valves, Fittings and Tubing
100000 & 150000 psig

100 and 150 Series

Ultra High Pressure Fittings Nipples and Tubing

100 Series

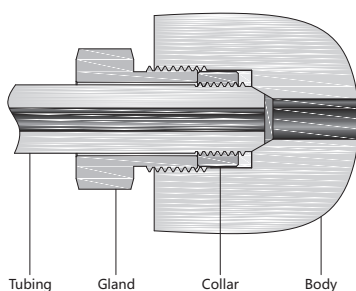
Features

- ❖ Maximum working pressure up to 100,000 psi(6900 bar)
- ❖ Working temperature from 0°F to 600°F(-18°C to 315°C)
- ❖ Coned-and-Threaded Connection
- ❖ Tubing sizes available for 1/4", 3/8", 9/16"
- ❖ Anti-vibration connection components available

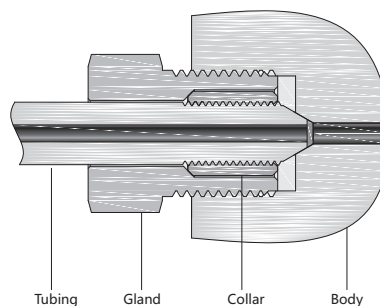
Standard Materials of Construction

Component	Material	Standard
Body, Collar, Gland	316 Stainless Steel	ASTM A479
Tubing		

Fluidline 100 Series Tube Fittings and Tubing can be made with materials suitable for sour gas service are available, materials are selected in accordance with NACE MR0175/ISO 15156



Tubing 1/4", 3/8"

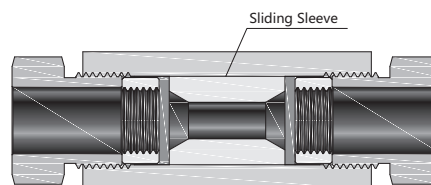
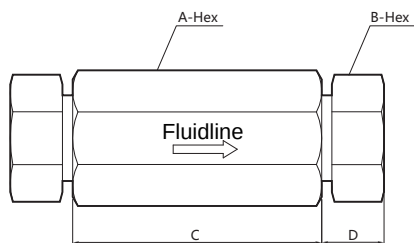


Tube 9/16"

Dimensions

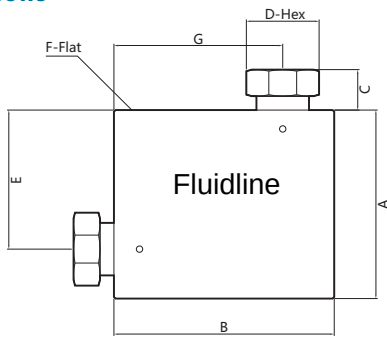
- ❖ All dimensions for reference only and subject to change

Unions



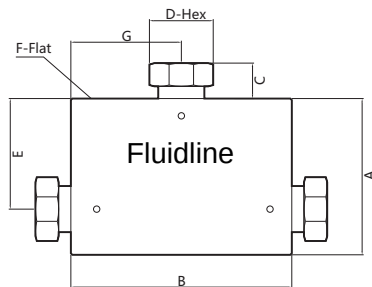
T-Tube O.D. in.	Fitting Type	Basic Ordering Number	Orifice in.(mm)	Dimension in.(mm)			
				A	B	C	D
1/4	Unions	100U-XP4-	0.094 (2.39)	1.12 (28.45)	0.75 (19.05)	2.62 (66.55)	0.52 (13.21)
	Unions(Slip on type)	100SU-XP4-					
3/8	Unions	100U-XP6-	0.125 (3.18)	1.12 (28.45)	0.75 (19.05)	2.62 (66.55)	0.52 (13.21)
	Unions(Slip on type)	100SU-XP6-					
9/16	Unions	100U-XP9-	0.188 (4.78)	1.38 (35.05)	1.19 (30.23)	2.19 (55.63)	0.81 (20.57)
	Unions(Slip on type)	100SU-XP9-					

Elbows



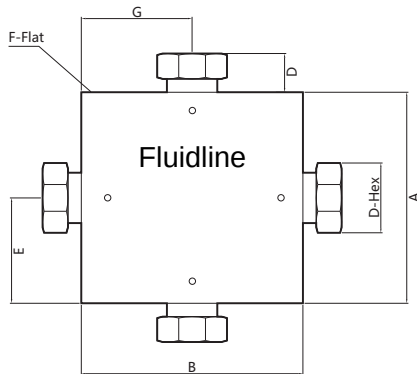
T-Tube O.D. in.	Basic Ordering Number	Orifice in.(mm)	Dimension in.(mm)						
			A	B	C	D	E	F	G
1/4	100UE-XP4-	0.094 (2.39)	2.12 (53.85)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.38 (35.05)	1.50 (38.10)
3/8	100UE-XP6-	0.125 (3.18)	2.12 (53.85)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.38 (35.05)	1.50 (38.10)
9/16	100UE-XP9-	0.188 (4.78)	2.24 (56.90)	2.62 (66.55)	0.81 (20.57)	1.19 (30.23)	1.50 (38.10)	1.50 (38.10)	1.88 (47.75)

Tees



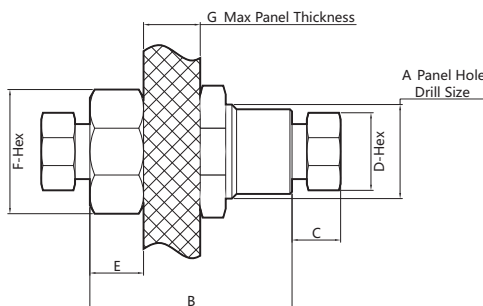
T-Tube O.D. in.	Basic Ordering Number	Orifice in.(mm)	Dimension in.(mm)						
			A	B	C	D	E	F	G
1/4	100UT-XP4-	0.094 (2.39)	2.12 (53.85)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.38 (35.05)	1.50 (38.10)
3/8	100UT-XP6-	0.125 (3.18)	2.12 (53.85)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.38 (35.05)	1.50 (38.10)
9/16	100UT-XP9-	0.188 (4.78)	2.12 (53.85)	2.62 (66.55)	0.81 (20.57)	1.19 (30.23)	1.38 (35.05)	1.50 (38.10)	1.31 (33.27)

Crosses



T-Tube O.D. in.	Basic Ordering Number	Orifice in.(mm)	Dimension in.(mm)						
			A	B	C	D	E	F	G
1/4	100UC-XP4-	0.094 (2.39)	3.00 (76.20)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.38 (35.05)	1.50 (38.10)
3/8	100UC-XP6-	0.125 (3.18)	3.00 (76.20)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.38 (35.05)	1.50 (38.10)
9/16	100UC-XP9-	0.188 (4.78)	2.75 (69.85)	2.62 (66.55)	0.81 (20.57)	1.19 (30.23)	1.38 (35.05)	1.50 (38.10)	1.31 (33.27)

Bulkhead Couplings



T-Tube O.D. in.	Basic Ordering Number	Orifice in.(mm)	Dimension in.(mm)						
			A	B	C	D	E	F	G
1/4	100BU-XP4-	0.094 (2.39)	2.12 (53.85)	3.25 (82.55)	0.52 (13.21)	0.75 (19.05)	1.38 (35.05)	2.00 (50.80)	0.38 (9.65)
3/8	100BU-XP6-	0.125 (3.18)	2.12 (53.85)	3.25 (82.55)	0.52 (13.21)	0.75 (19.05)	1.38 (35.05)	2.00 (50.80)	0.38 (9.65)
9/16	100BU-XP9-	0.188 (4.78)	1.69 (42.93)	2.75 (69.85)	0.81 (20.57)	1.19 (30.23)	1.00 (25.40)	1.88 (47.75)	0.38 (9.65)

How to Order

100U

XPF4

316

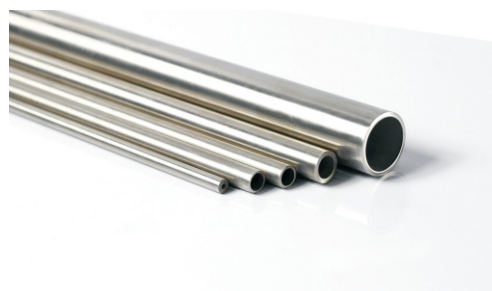
Fitting Type	Connection Type	Connection Size	Body Material
100U Unions 100SU Unions(Slip on type) 100UE Elbows 100UT Tees 100UC Crosses 100BU Bulkhead Couplings	XPF Ultra High Pressure Fittings	4 1/4 in. 6 3/8 in. 9 9/16 in.	316 316 S.S.

100 Series Tubing

❖ 100 series ultra high pressure tubing is manufactured specifically for ultra high pressure applications

Dimensions

Basic Ordering Number	Tube O.D. in.(mm)	Tube I.D. in.(mm)	Tube Wall Thickness in.(mm)
100FT-4-0.083-6M-	1/4 (6.35)	0.083 (2.11)	0.083 (2.11)
100FT-6-0.125-6M-	3/8 (9.63)	0.125 (3.18)	0.125 (3.18)
100FT-9-0.188-6M-	9/16 (14.29)	0.188 (4.78)	0.187 (4.75)



Technical Data

Tube O.D. in.(mm)	Working Pressure, psig(bar)			
	-325 to 100°F (-198 to 37.8°C)	200°F (93°C)	400°F (204°C)	600°F (316°C)
1/4 (6.35)	100,000 (6900)	83,000 (5727)	72,000 (4965)	65,000 (4480)
3/8 (9.63)	100,000 (6900)	83,000 (5727)	72,000 (4965)	65,000 (4480)
9/16 (14.29)	100,000 (6900)	83,000 (5727)	72,000 (4965)	65,000 (4480)

How to Order

100FT

4

0.083

6M

TP316

Tubing Type	Tubing O.D. (in.)	Wall Thickness (in.)	Nominal Length (m/feet)	Material Grade
100FT 100 Series ultra high pressure tubing	4 1/4 in.	0.083	1M 1 meter	TP316
	6 3/8 in.	0.125	2M 2 metres	
	9 9/16 in.	0.187	3M 3 metres	
			4M 4 metres	
			5M 5 metres	
			6M 6 metres	
			10F 10 feet	
			20F 20 feet	

Coned and Threaded Nipples

❖ Supply coned and threaded nipples in various sizes and lengths for 100 series ultra high pressure valves and fittings

How to Order

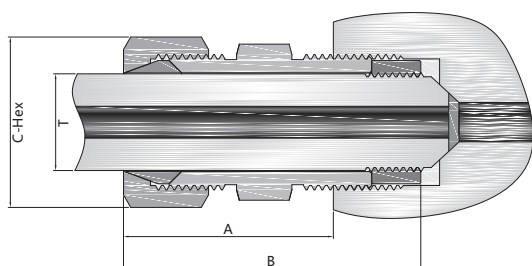
NIP — **XPF4** — **4** — **316**

Type	Connection Type	Connection Size	Nominal Length	Material
NIP Coned and Threaded Nipples	XPF Ultra High Pressure Fittings	4 1/4 in. 6 3/8 in. 9 9/16 in.	4 4 in. 6 6 in. 8 8 in. 10 10 in.	316 316 S.S.

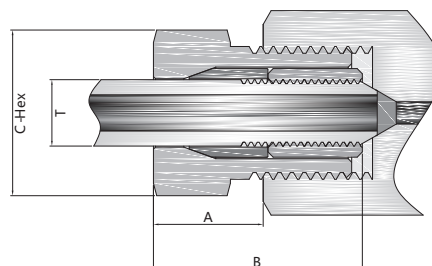


Anti-Vibration Collet Gland Assemblies

- ❖ Completely interchangeable with standard 100 series ultra high pressure connections
- ❖ Moving the stress concentration back to the unthreaded part of the tubing and providing a wedge-typegripping action
- ❖ Anti-vibration collet gland assembly strengthens the entire structure



Tubing 1/4", 3/8"



Tube 9/16"

Tube O.D. in.	Basic Ordering Number	Dimension in.(mm)		
		A	B	C
1/4	AVA-XPF4-	1.06 (26.92)	1.65 (41.91)	0.625 (15.88)
3/8	AVA-XPF6-	1.38 (34.92)	1.88 (47.62)	0.75 (19.05)
9/16	AVA-XPF9-	1.00 (25.40)	1.50 (38.10)	1.19 (30.16)

How to Order

AVA — **XPF4** — **316**

Type	Connection Type	Connection Size	Material
AVA Anti-Vibration Collet Gland Assemblies	XPF Ultra High Pressure Fittings	4 1/4 in. 6 3/8 in. 9 9/16 in.	316 316 S.S.

Ultra High Pressure Fittings Nipples and Tubing

150 Series

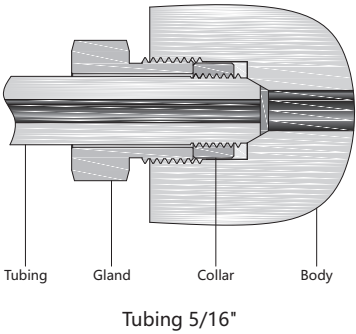
Features

- ❖ Maximum working pressure up to 150,000 psi (10344 bar)
- ❖ Working temperature from 0°F to 600°F (-18°C to 315°C)
- ❖ Coned-and-Threaded Connection
- ❖ Tubing sizes available for 5/16"
- ❖ Anti-vibration connection components available

Standard Materials of Construction

Component	Material	Standard
Body, Collar, Gland	316 Stainless Steel	ASTM A479
Tubing		

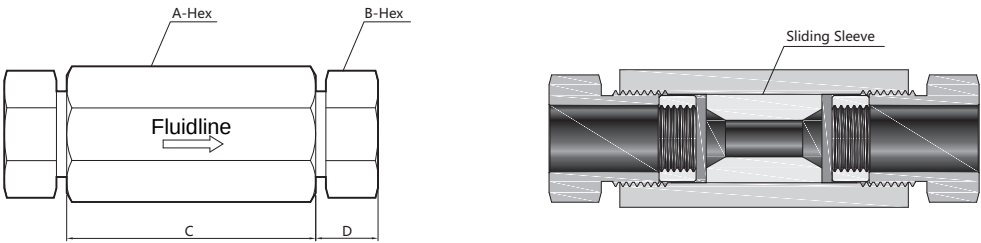
Fluidline 150 Series Tube Fittings and Tubing can be made with materials suitable for sour gas service are available, materials are selected in accordance with NACE MR0175/ISO 15156



Dimensions

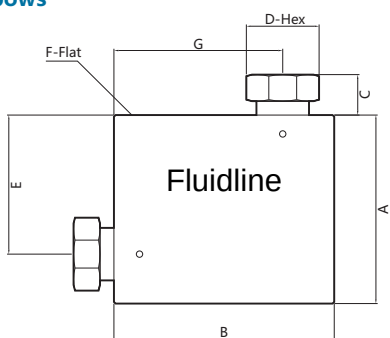
- ❖ All dimensions for reference only and subject to change

Unions



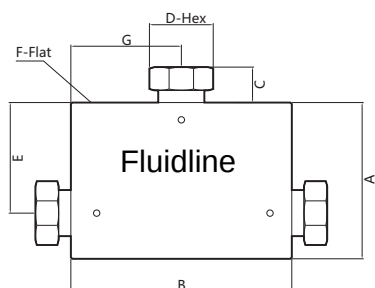
T-Tube O.D. in.	Fitting Type	Basic Ordering Number	Orifice in.(mm)	Dimension in.(mm)			
				A	B	C	D
5/16	Unions	150U-XPf5-	0.094 (2.39)	1.12 (28.45)	0.75 (19.05)	2.62 (66.55)	0.52 (13.21)
	Unions(Slip on type)	150SU-XPf5-					

Elbows



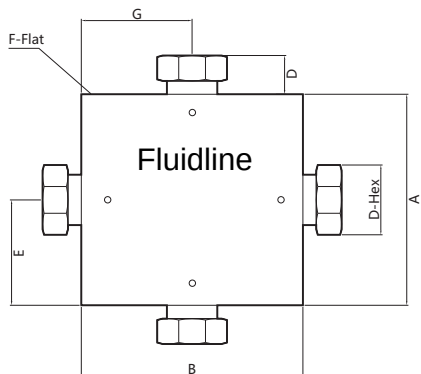
T-Tube O.D. in.	Basic Ordering Number	Orifice in.(mm)	Dimension in.(mm)						
			A	B	C	D	E	F	G
5/16	150UE-XP5-	0.094 (2.39)	2.12 (53.85)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.38 (35.05)	1.50 (38.10)

Tees



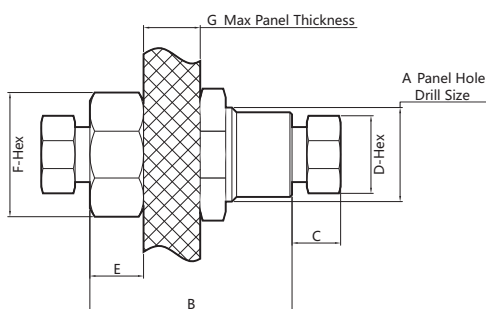
T-Tube O.D. in.	Basic Ordering Number	Orifice in.(mm)	Dimension in.(mm)						
			A	B	C	D	E	F	G
5/16	150UT-XP5-	0.094 (2.39)	2.12 (53.85)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.38 (35.05)	1.50 (38.10)

Crosses



T-Tube O.D. in.	Basic Ordering Number	Orifice in.(mm)	Dimension in.(mm)						
			A	B	C	D	E	F	G
5/16	150UC-XP5-	0.094 (2.39)	3.00 (76.20)	3.00 (76.20)	0.52 (13.21)	0.75 (19.05)	1.50 (38.10)	1.38 (35.05)	1.50 (38.10)

Bulkhead Couplings



T-Tube O.D. in.	Basic Ordering Number	Orifice in.(mm)	Dimension in.(mm)						
			A	B	C	D	E	F	G
5/16	150BU-XP5-	0.094 (2.39)	2.12 (53.85)	3.25 (82.55)	0.52 (13.21)	0.75 (19.05)	1.38 (35.05)	2.00 (50.80)	0.38 (9.65)

How to Order

150U

XPF5

316

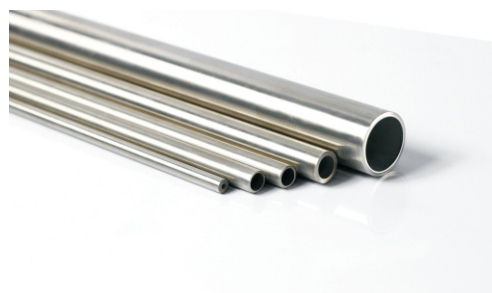
Fitting Type	Connection Type	Connection Size	Body Material
150U Unions 150SU Unions(Slip on type) 150UE Elbows 150UT Tees 150UC Crosses 150BU Bulkhead Couplings	XPF Ultra High Pressure Fittings	5 5/16 in.	316 316 S.S.

150 Series Tubing

❖ 150 series ultra high pressure tubing is manufactured specifically for ultra high pressure applications

Dimensions

Basic Ordering Number	Tube O.D. in.(mm)	Tube I.D. in.(mm)	Tube Wall Thickness in.(mm)
150FT-5-0.062-6M-	5/16 (7.94)	0.062 (1.57)	0.125 (3.18)



Technical Data

Tube O.D. in.(mm)	Working Pressure, psig(bar)			
	-325 to 100°F (-198 to 37.8°C)	200°F (93°C)	400°F (204°C)	600°F (316°C)
5/16 (7.94)	150,000 (10350)	150,000 (10350)	144,400 (9956)	136,350 (9401)

How to Order

150FT

5

0.062

6M

TP316

Tubing Type	Tubing O.D. (in.)	Wall Thickness (in.)	Nominal Length (m/feet)	Material Grade
150FT 150 Series ultra high pressure tubing	5 5/16 in.	0.125	1M 1 meter 2M 2 metres 3M 3 metres 4M 4 metres 5M 5 metres 6M 6 metres 10F 10 feet 20F 20 feet	TP316

Coned and Threaded Nipples

❖ Supply coned and threaded nipples in various sizes and lengths for 150 series ultra high pressure valves and fittings

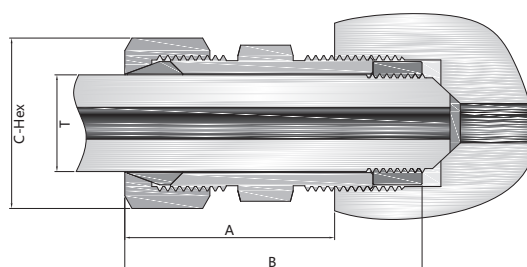
How to Order

NIP	—	XPF5	—	4	—	316
Type	Connection Type	Connection Size	Nominal Length	Material		
NIP Coned and Threaded Nipples	XPF Ultra High Pressure Fittings	5 5/16 in.	4 4 in. 6 6 in. 8 8 in. 10 10 in.	316 316 S.S.		



Anti-Vibration Collet Gland Assemblies

- ❖ Completely interchangeable with standard 150 series ultra high pressure connections
- ❖ Moving the stress concentration back to the unthreaded part of the tubing and providing a wedge-type gripping action
- ❖ Anti-vibration collet gland assembly strengthens the entire structure



Tube 5/16"

Tube O.D. in.	Basic Ordering Number	Dimension in.(mm)		
		A	B	C
5/16	AVA-XPF5-	1.38 (34.92)	1.88 (47.62)	0.75 (19.05)

How to Order

AVA	—	XPF5	—	316
Type	Connection Type	Connection Size	Material	
AVA Anti-Vibration Collet Gland Assemblies	XPF Ultra High Pressure Fittings	5 5/16 in.	316 316 S.S.	



High Pressure Tools

MCT1, MTT1 and MTR1 Series

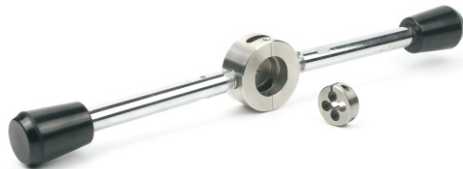
Coning Tools

Fluidline Coning Tools provide 1/4", 3/8", 9/16" diameter selection, it is used to make conical surfaces on tubing



Threading Tools

Fluidline Threading Tools provide 1/4", 3/8", 9/16" diameter selection, it is used to make threads on tubing



Reseating Tools

❖ Reseating Tools provide 1/4", 3/8", 9/16" diameter selection, it is used for female tubing connection cone seat



How to Order		
MCT1	—	MPF4
Tool Series	Connection Type	Connection Size
MCT1 Coning Tools	MPF Medium Pressure Connection	4 1/4 in.
MTT1 Threading Tools	HPF High Pressure Connection	6 3/8 in.
MRT1 Reseating Tools		9 9/16 in.