

# 316 Precision Instrumentation Pipe Fittings



## Features

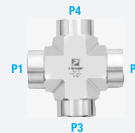
- Size Ranges from 1/16" to 2"
- To avoid Galling threads are hardened with smooth surface which helps to extend the fitting service life.
- For smooth flow path elbows are designed with radius junction.
- All Fittings are marked with Size, Material and Heat code for easy source tracing.
- All threads are capped for protection and properly packaged
- Straight fittings are manufactured from bar stock & Forged fittings are manufactured from forgings
- All pipe threads meet the requirement if ASME/ANSI B1.20.1 for tapered pipe threads (NPT)
- Working pressure meets the requirements of ANSI/ASME B31.3 at ambient temperature.

## Ordering Information

PANAM

**P - HN - 4N - 4N - SS**

Fitting Type		P1 Size		P1 Type		P2, P3, and P4		Material	
HN	Hex Nipples	1	1/16	N	NPT Threads	Specify as per P Type and P Size		SS	316 SS
BHU	Bulkhead Union	2	1/8	R	ISO Tapered Threads			B	Brass
SC	Swivel Connector	3	3/16	G	ISO Parallel Threads	M	Alloy 400	INC	Alloy 600
SU	Swivel Union	4	1/4	M	Metric Threads	S	SAE/MS Straight Threads	CS	Carbon Steel
HRN	Hex Reducing Nipples	5	5/16-24	J	37° Flare	Materials like Hastloy, Monel, Duplex 2205, Duplex 2507 etc are available upon request			
HLN	Hex Long Nipples	6	3/8 or 3/8-24						
CN	Close Nipples	7	7/16-20						
LPN	Long Pipe Nipples	8	1/2 or M8 x 1						
HC	Hex Couplings	9	9/16-18						
RHC	Reducing Hex Couplings	10	5/8 or M10 x 1						
A	Adapters	12	3/4 or 3/4-16 or M12 x 1.5						
RA	Reducing Adapters	14	7/8-14 or M14 x 1.5						
RB	Reducing Bushing	16	1 or M16 x 1.5						
HP	Hex Plugs	17	1 1/16-12						
HHP	Hallow Hex Plugs	18	M18 x 1.5						
PC	Pipe Caps	19	1 3/16-12						
U	Union	20	1 1/4 or M20 x 1.5						
FE	Female Elbow	21	1 5/16-12						
ME	Male Elbow	22	M22 x 1.5						
UE	Union Elbow	24	1 1/2 or M24 x 1.5						
SE	Street Elbow	26	1 5/8-12						
FT	Female Tee	27	M27 x 2						
MT	Male Tee	30	1 7/8-12 or M30 x 2						
FBT	Female Branch Tee	32	2						



P1, P2, P3 & P4 Shall be described in the following orders. For tees the run shall proceed the branch, for cross the run shall proceed the branch

### Pressure Ratings

Size	316 SS		Brass		Carbon Steel	
	Male	Female	Male	Female	Male	Female
1/16	11000	6700	5500	3300	11000	6700
1/8	10000	6500	5000	3200	10000	6500
1/4	8000	6600	4000	3300	8000	6600
3/8	7800	5300	3900	2600	7800	5300
1/2	7700	4900	3800	2400	7700	4900
3/4	7300	4600	3600	2300	7300	4600
1	5300	4400	2600	2200	5300	4400
1 1/4	6000	5000	3000	2500	6000	5000
1 1/2	5000	4600	2500	2300	5000	4600
2	3900	3900	1900	1900	3900	3900

- Pressure ratings are based on ASME Code for pressure piping B13.3, Process piping with allowable stress 20,000psi for 316 SS 10,000psi/Brass, and 20,000psi/Carbon Steel.
- To determine pressure ratings in accordance with B31.1 Power piping - 316 SS x 0.94 / CS x 0.75 / Brass material remains same.
- To determine kPa. multiply by 6.89

### Installation Instructions

To ensure leak proof tight seal, PANAM recommends use of pipe thread sealant on all NPT threads. The most effective sealing method is the use of Teflon tape, Tape should be used on male NPT tapered threads. Clean both male and female tapered threads, wrap tape in direction of male tapered, cut off excess tape.

### Material

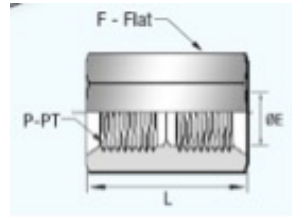
Material	Bar Stock	Forging
316 SS	ASTM A276, ASME SA479, EN 1.4401	ASTM A182, ASME SA182, EN 1.4401
Alloy 400	ASTM B164, ASME SB164	ASTM B564, ASME SB564
Alloy 600	ASTM B166, ASME SB166	ASTM B564, ASME SB564
Brass	ASME B16/ASTM B453	ASTM B283
Carbon Steel	ASTM A108	ASTM A105

Thread Relevant Standards	
NPT Threads	ASME B1.20.1, SAE AS71051
ISO Tapered Threads	ISO 7-1, BS 21, JIS B0203
ISO Parallel Threads	ISO 228, JIS B0202
SAE/MS	ASME B1.1, SAE J475
Metric	ISO 261

## Hexagon Coupling

### Female x Female, NPT

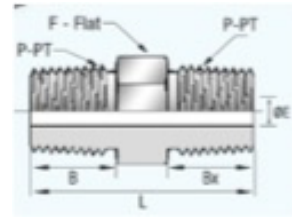
Part No	P-PT, NPT	L	F	E
PHC-02	1/8	20.6	14.3	8.6
PHC-04	1/4"	30.2	19.1	11.4
PHC-06	3/8	33.3	22.2	15.0
PHC-08	1/2	39.6	27	18.5
PHC-12	3/4	41.1	33.3	23.9
PHC-16	1	50.8	41.3	29.7



## Hexagon Nipples

### Male x Male, NPT

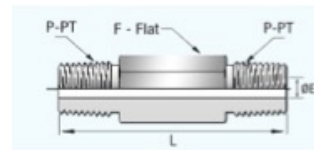
Part No	P-PT, NPT	L	F	B	Bx	E
PHN-01	1/16	25.6	7.9	9.7	9.7	3.0
PHN-02	1/8	25.6	11.1	9.7	9.7	4.8
PHN-04	1/4	35.6	14.3	14.2	14.2	7.1
PHN-06	3/8	36.3	17.5	14.2	14.2	9.7
PHN-08	1/2	46.7	22.2	19.1	19.1	11.9
PHN-12	3/4	46.7	27	19.1	19.1	15.7
PHN-16	1	58.9	34.9	23.9	23.9	22.4



## Hexagon Nipples Long

### Male x Male, NPT

Part No	P-PT, NPT	A	E	F
PHNL-02-L1.5	1/8"	1.5"	4.8mm	11.1mm
PHNL-02-L2	1/8"	2"	4.8mm	11.1mm
PHNL-02-L3	1/8"	3"	4.8mm	11.1mm
PHNL-02-L4	1/8"	4"	4.8mm	11.1mm
PHNL-02-L6	1/8"	6"	4.8mm	11.1mm
PHNL-04-L1.5	1/4"	1.5"	7.1mm	14.3mm
PHNL-04-L2	1/4"	2"	7.1mm	14.3mm
PHNL-04-L3	1/4"	3"	7.1mm	14.3mm
PHNL-04-L4	1/4"	4"	7.1mm	14.3mm
PHNL-04-L6	1/4"	6"	7.1mm	14.3mm
PHNL-06-L1.5	3/8"	1.5"	9.6mm	17.5mm
PHNL-06-L2	3/8"	2"	9.6mm	17.5mm
PHNL-06-L3	3/8"	3"	9.6mm	17.5mm
PHNL-06-L4	3/8"	4"	9.6mm	17.5mm
PHNL-06-L6	3/8"	6"	9.6mm	17.5mm
PHNL-08-L1.5	1/2"	1.5"	11.9mm	22.2mm

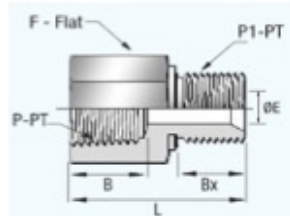


Part No	P-PT, NPT	A	E	F
PHNL-08-L2	1/2"	2"	11.9mm	22.2mm
PHNL-08-L3	1/2"	3"	11.9mm	22.2mm
PHNL-08-L4	1/2"	4"	11.9mm	22.2mm
PHNL-08-L6	1/2"	6"	11.9mm	22.2mm
PHNL-12-L1.5	3/4"	1.5"	15.7mm	27mm
PHNL-12-L2	3/4"	2"	15.7mm	27mm
PHNL-12-L3	3/4"	3"	15.7mm	27mm
PHNL-12-L4	3/4"	4"	15.7mm	27mm
PHNL-12-L6	3/4"	6"	15.7mm	27mm
PHNL-16-L1.5	1"	1.5"	22.3mm	34.9mm
PHNL-16-L2	1"	2"	22.3mm	34.9mm
PHNL-16-L3	1"	3"	22.3mm	34.9mm
PHNL-16-L4	1"	4"	22.3mm	34.9mm
PHNL-16-L6	1"	6"	22.3mm	34.9mm

## Equal Male x Female Adaptors

### Male x Female, NPT

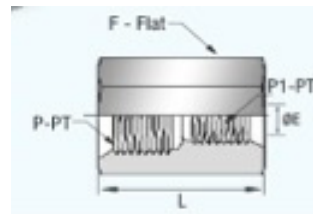
Part No	P-PT, NPT	L	F	B	Bx	E
PPA-02	1/8	25.1	14.3	9.9	7.1	4.1
PPA-04	1/4	33.5	19.1	10.4	11.2	5.8
PPA-06	3/8	35.8	22.2	15	11.2	7.9
PPA-08	1/2	44.2	27	15	14.2	11.9
PPA-12	3/4	48	33.3	20.6	15.7	15.7
PPA-16	1	53.3	41.3	25.4	18.3	19.8



## Reducing Hexagon Coupling

### Female x Female, NPT

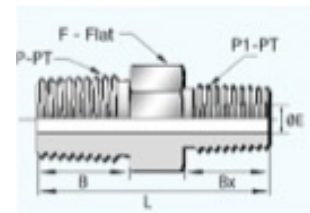
Part No	P-PT, NPT	P-PT, NPT	L	F	E
PRC-04-02	1/4	1/8	31	19.1	8.6
PRC-06-04	3/8	1/4	35	22.2	11.4
PRC-08-02	1/2	1/8	39.6	27	8.6
PRC-08-04	1/2	1/4	44.4	27	11.4
PRC-08-06	1/2	3/8	45.2	27	15
PRC-12-04	3/4	1/4	46	33.3	11.4
PRC-12-08	3/4	1/2	52.3	33.3	18.5
PRC-16-08	1	1/2	55.6	41.3	18.5
PRC-16-12	1	3/4	57.2	41.3	23.9



## Reducing Hexagon Nipples

### Male x Male, NPT

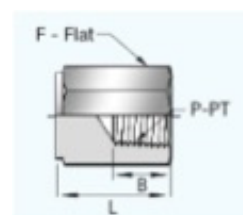
Part No	P-PT, NPT	P-P1-PT, NPT	L	F	B	Bx	E
PRHN-02-01	1/8	1/16	25.6	11.1	9.7	9.7	3.0
PRHN-04-02	1/4	1/8	31	14.3	14.2	9.7	4.8
PRHN-06-02	3/8	1/8	31.8	17.5	14.2	9.7	4.8
PRHN-06-04	3/8	1/4	36.3	17.5	14.2	14.2	7.1
PRHN-08-02	1/2	1/8	37.3	22.2	19.1	9.7	4.8
PRHN-08-04	1/2	1/4	41.9	22.2	19.1	14.2	7.1
PRHN-08-06	1/2	3/8	41.9	22.2	19.1	14.2	9.7
PRHN-12-06	3/4	3/8	45.2	19.1	19.1	14.2	9.7
PRHN-12-08	3/4	1/2	46.7	19.1	19.1	19.1	11.9
PRHN-16-08	1	1/2	54.1	23.9	19.1	19.1	11.9
PRHN-16-12	1	3/4	54.1	23.9	19.1	19.1	15.7



## Pipe Caps

### NPT

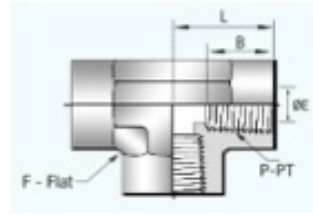
Part No	P-PT, NPT	L	F	B
PCP-02	1/8	19.1	14.3	10.4
PCP-04	1/4	23.1	19.1	15.0
PCP-06	3/8	26.2	22.2	15.0
PCP-08	1/2	34.0	27.0	19.8
PCP-12	3/4	36.6	33.3	20.6
PCP-16	1	41.1	41.3	25.4



## Equal Tees

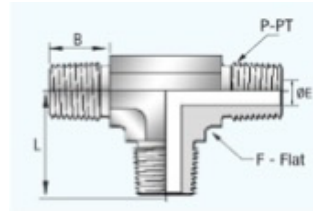
### Female, NPT

Part No	P-PT, NPT	L	F	B	E
PFT-02	1/8	26.4	12.7	10.4	8.6
PFT-04	1/4	29.7	17.5	15	11.4
PFT-06	3/8	36.1	20.6	15	15
PFT-08	1/2	39.6	25.4	19.8	18.5
PFT-12	3/4	48.8	31.8	20.6	23.9
PFT-16	1	48.5	42.9	25.4	29.7



### Male, NPT

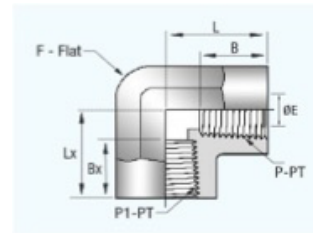
Part No	P-PT, NPT	L	F	B	E
PMT-02	1/8	22.4	11.1	9.7	4.8
PMT-04	1/4	26.7	12.7	14.2	7.1
PMT-06	3/8	29.7	17.5	14.2	9.6
PMT-08	1/2	36.8	20.6	19.1	11.9



## Equal Elbows

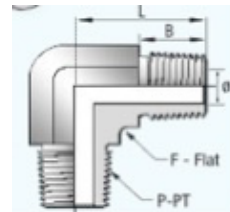
### Female, NPT

Part No	P-PT, NPT	P1,PT, NPT	L	F	B	E	Bx
PPFE-02	1/8	1/8	26.4	12.7	10.4	7.1	10.4
PPFE-04	1/4	1/4	29.7	17.5	15	10.4	15.0
PPFE-06	3/8	3/8	36.1	20.6	15	12.7	15.0
PPFE-08	1/2	1/2	39.6	25.4	19.8	17.1	19.8
PPFE-12	3/4	3/4	48.8	31.8	22.4	22.4	20.6
PPFE-16	1	1	48.5	42.9	28.1	28.1	25.4



### Male, NPT

Part No	P-PT, NPT	L	F	B	E
PPME-02	1/8	22.4	11.1	9.7	4.8
PPME-04	1/4	26.7	12.7	14.2	7.1
PPME-06	3/8	29.7	17.5	14.2	9.6
PPME-08	1/2	36.8	20.6	19.1	15.7



### Male x Female, NPT

Part No	P-PT, NPT	L	F	B	E	Lx	Bx
PSE-01	1/16	21.8	11.1	9.9	3.0	22.4	9.7
PSE-02	1/8	26.4	12.7	10.4	4.8	22.1	9.7
PSE-04	1/4	29.7	17.5	15.0	7.1	29.7	14.2
PSE-06	3/8	36.1	20.6	15.0	9.6	32	14.2
PSE-08	1/2	39.6	25.4	19.8	11.9	39.6	19.1
PSE-12	3/4	48.8	31.8	20.6	15.7	42.4	19.1
PSE-16	1	48.5	42.9	25.4	22.4	49.3	23.9

