IBR Approved

ANSI B1.20.1

Armech Alloys	IBR Approved	Manufacturer in India
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ASME B1.20.1 was approved by ASME Standard. ANSI B1.20.1 Standard covers dimensions and gaging of the most popular pipe threads: NPT, NPTR, NPSM and NPSC. National Pipe Thread Tapered (NPT) is a U.S. Standard for tapered threads used to joining pipes together. ANSI B1.20.1 is a technical general that defines the specs for NPT (National Pipe Taper) threads utilizes in threaded fittings. ANSI B1.20.1 threaded fittings, includes elbows, tees, and couplings, uses tapered threads to create a stress-tight seal while tightened.

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ASME B1.20.1 NPT Used for Leak-Free Seal

B1.20.1 Standards Specification

Standard ANSI B1.20.1	**Size** 3/8” To 1”	**Thread** NPT, NPSC, NPSL NPTR, NPSM
Temperature Up To 37.8 Deg C	**Material Pressure** SS 316 - 20, 000 PSI	**Brass Pressure** 10,000 PSI
Carbon Steel Pressure 20,000 PSI	**Testing** Tensile Test	**Use** Leak-free seal

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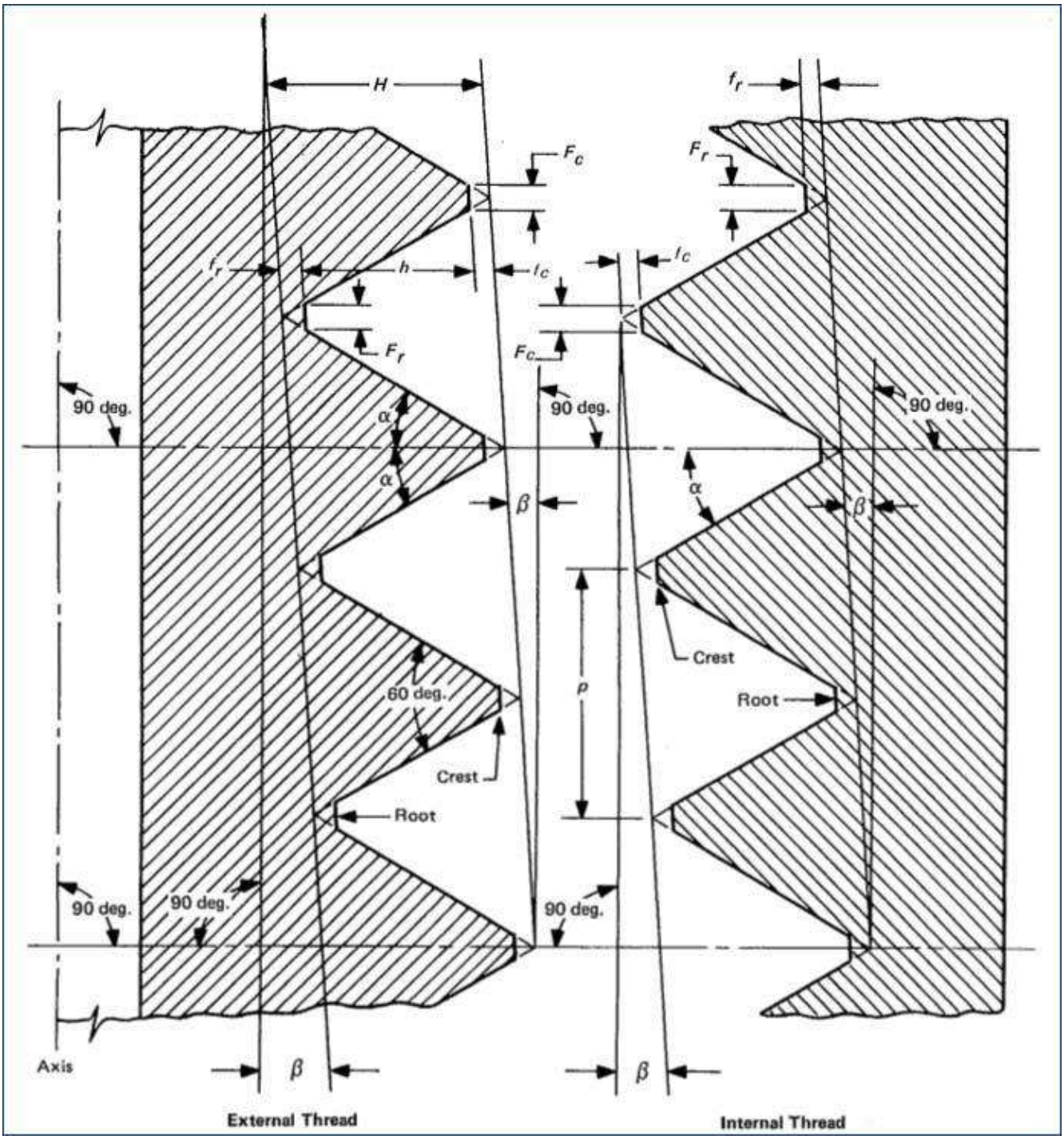
External Thread and Internal Thread of ANSI B1.20.1 Threaded fittings

The NPT Thread ANSI B1.20.1 provides a 1° 47' taper consistent with inch on the thread, facilitating leak-unfastened connections in piping systems. Compliance with ANSI B1.20.1 NPT ensures reliability in fluid and fuel transport programs, as these fittings are designed to meet strict tolerances for commercial environments, such as oil, gas, and water systems.

Thread Designations of NPT Thread ANSI B1.20.1

Size	Thread
3/8" – 18"	NPT
½" – 14"	NPTR
1/8" – 27"	NPSM
1/8" – 27"	NPSL
1/8" – 27"	NPSC
1" -11.5"	NPSH

External Thread and Internal Thread of ANSI B1.20.1 NPT



Check ANSI B1.20.1 NPT Female Thread Material Standards and Temperature Ratings

ANSI B1.20.1 Threaded Fittings Temperature Ratings

Materials	Forgings	Temperature Ratings
Carbon Steel	ASTM A105	190°C
SS 316	ASTM A182	537°C
Brass	ASTM B124 and ASTM B283	204°C

Also View NPT Thread ASME B1 20.1 Pressure Rating

ASME B1 20.1 Pressure Rating

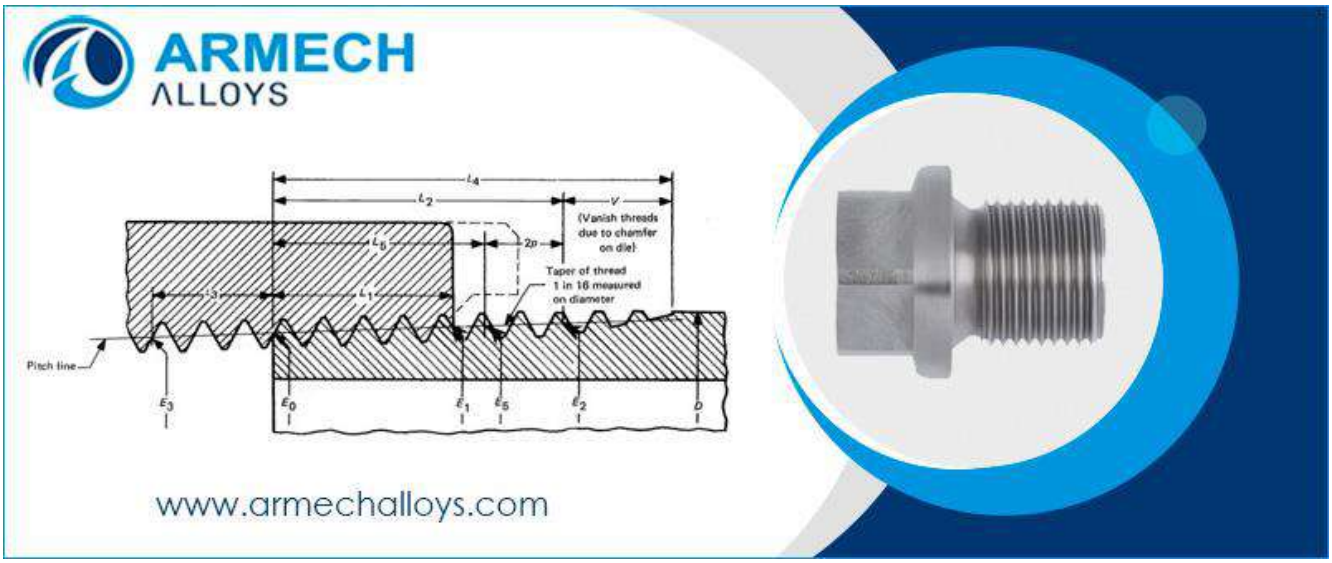
Size Designator	NPT Threads Size	Brass (Male)	Brass (Female)
1	1/16	5,400 PSI	3,300 PSI
2	1/8	4,900 PSI	3,000 PSI
4	1/4	4,000 PSI	3,200 PSI
6	3/8	3,800 PSI	2,500 PSI

8	1/2	3,700 PSI	2,300 PSI
12	3/4	3,600 PSI	2,200 PSI
16	1	2,500 PSI	2,100 PSI
20	1-1/4	3,100 PSI	2,500 PSI
24	1-1/2	2,500 PSI	2,200 PSI
32	2	2,000 PSI	1,900 PSI

Size Designator	NPT Threads Size	Carbon Steel (Male)	Carbon Steel (Female)
1	1/16	10,500 PSI	6,600 PSI
2	1/8	10,000 PSI	6,100 PSI
4	1/4	8,100 PSI	6,300 PSI
6	3/8	7,600 PSI	5,000 PSI
8	1/2	7,500 PSI	4,700 PSI
16	1	5,300 PSI	4,300 PSI
20	1-1/4	6,200 PSI	5,000 PSI
24	1-1/2	5,100 PSI	4,500 PSI
32	2	4,000 PSI	3,900 PSI

Size Designator	NPT Threads Size	Stainless Steel 316 (Male)	Stainless Steel 316 (Female)
1	1/16	10,500 PSI	6,600 PSI
2	1/8	10,000 PSI	6,100 PSI
4	1/4	8,100 PSI	6,300 PSI
6	3/8	7,600 PSI	5,000 PSI
8	1/2	7,500 PSI	4,700 PSI
12	3/4	7,200 PSI	4,400 PSI
16	1	5,300 PSI	4,300 PSI
20	1-1/4	6,200 PSI	5,000 PSI
24	1-1/2	5,100 PSI	4,500 PSI
32	2	4,000 PSI	3,900 PSI

ANSI B1.20.1 Dimensions

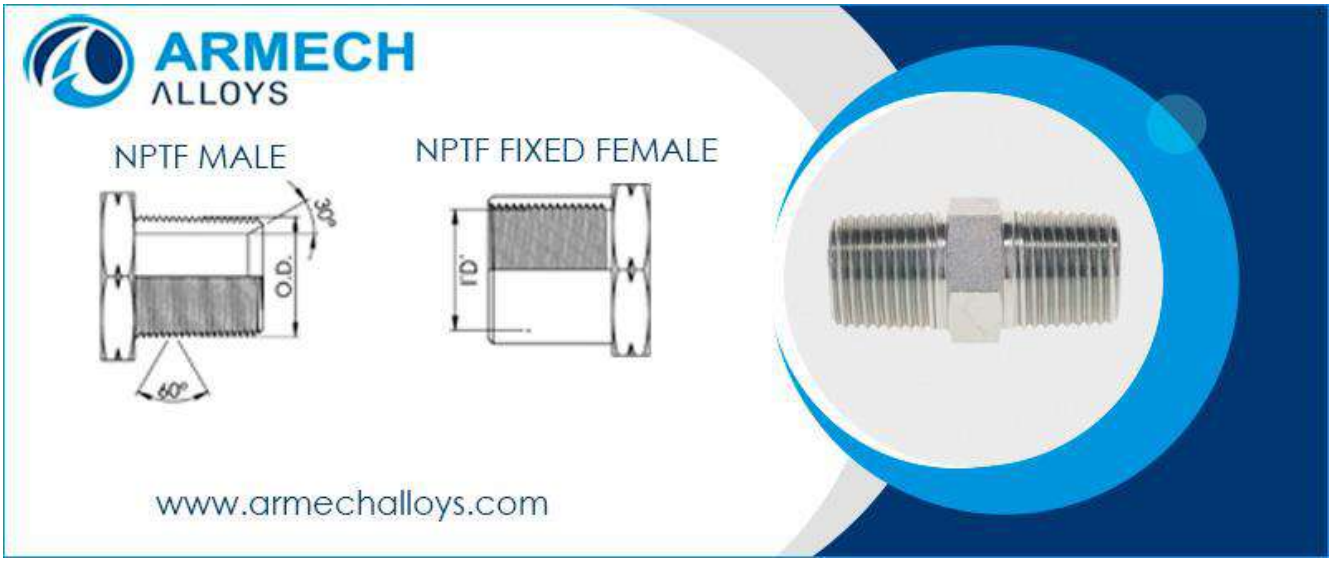


Number of Threads Per Inch	NPS	Pitch diameter at plane of hand-tight engagement		Truncation, maximum		Thread Depth		Thread Pitch	
		E		L		H		P	
		Inch	MM	MM	Inch	MM	Inch	MM	Inch
27	1/8"	0.37360	9.489	0.091	0.00360	0.753	0.02963	0.941	0.03704
18	1/4"	0.49163	12.487	0.124	0.00490	1.129	0.04444	1.411	0.05556
18	3/8"	0.62701	15.926	0.124	0.00490	1.129	0.04444	1.411	0.05556
14	1/2"	0.77843	19.772	0.142	0.00560	1.451	0.05714	1.814	0.07143
14	3/4"	0.98887	25.117	0.142	0.00560	1.451	0.05714	1.814	0.07143
11.5	1"	1.23863	31.461	0.160	0.00630	1.767	0.06957	2.209	0.08696

11.5	1-1/4"	1.58338	40.218	0.160	0.00630	1.767	0.06957	2.209	0.08696
11.5	1-1/2"	1.82234	46.287	0.160	0.00630	1.767	0.06957	2.209	0.08696
11.5	2"	2.29627	58.325	0.160	0.00630	1.767	0.06957	2.209	0.08696
8	2-1/2"	2.76215	70.159	0.198	0.00780	2.540	0.10000	3.175	0.12500
8	3"	3.38850	86.068	0.198	0.00780	2.540	0.10000	3.175	0.12500
8	3-1/2"	3.88881	98.776	0.198	0.00780	2.540	0.10000	3.175	0.12500
8	4"	4.38712	111.433	0.198	0.00780	2.540	0.10000	3.175	0.12500
8	5"	5.44929	138.412	0.198	0.00780	2.540	0.10000	3.175	0.12500
8	6"	6.50597	165.252	0.198	0.00780	2.540	0.10000	3.175	0.12500
8	8"	8.50003	215.901	0.198	0.00780	2.540	0.10000	3.175	0.12500
8	10"	10.62094	296.772	0.198	0.00780	2.540	0.10000	3.175	0.12500
8	12"	12.61781	320.493	0.198	0.00780	2.540	0.10000	3.175	0.12500
8	14"	13.87262	352.365	0.198	0.00780	2.540	0.10000	3.175	0.12500
8	16"	15.87575	403.244	0.198	0.00780	2.540	0.10000	3.175	0.12500
8	18"	17.87500	454.025	0.198	0.00780	2.540	0.10000	3.175	0.12500
8	20"	19.87031	504.706	0.198	0.00780	2.540	0.10000	3.175	0.12500
8	24"	23.68094	606.066	0.198	0.00780	2.540	0.10000	3.175	0.12500

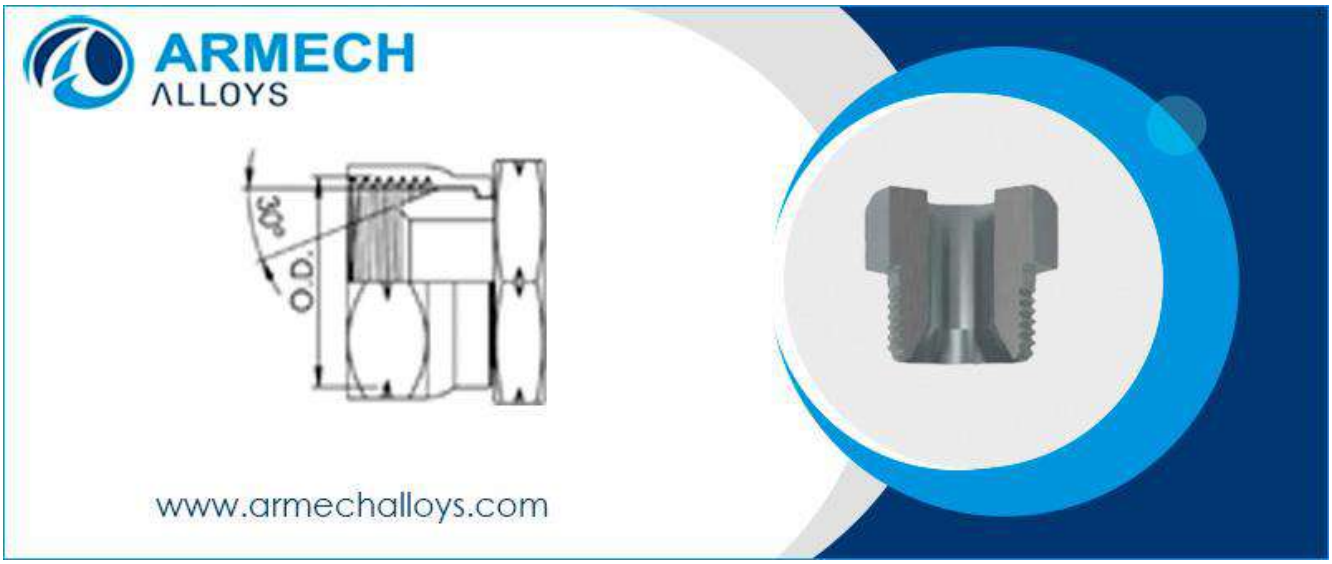
Number of Threads Per Inch	NPS	Length of vanish thread		Thread Length		Length from end of pipe to plane of hand- tight engagement	
		L2		L2		L1	
		in	Threads	in	Threads	in	Threads
27	1/8"	0.1285	3.47	0.2639	7.12	0.162	4.36
18	1/4"	0.1928	3.47	0.4018	7.23	0.228	4.10
18	3/8"	0.1928	3.47	0.4078	7.34	0.240	4.32
14	1/2"	0.2478	3.47	0.5337	7.47	0.320	4.48
14	3/4"	0.2478	3.47	0.5457	7.64	0.339	4.75
11.5	1"	0.3017	3.47	0.6828	7.85	0.400	4.60
11.5	1-1/4"	0.3017	3.47	0.7068	8.13	0.420	4.83
11.5	1-1/2"	0.3017	3.47	0.7235	8.32	0.402	4.83
11.5	2"	0.3017	3.47	0.7565	8.70	0.436	5.01
8	2-1/2"	0.4337	3.47	1.1375	9.10	0.682	5.46
8	3"	0.4337	3.47	1.2000	9.60	0.766	6.13
8	3-1/2"	0.4337	3.47	1.2500	10.00	0.821	6.57
8	4"	0.4337	3.47	1.3000	10.40	0.844	6.75
8	5"	0.4337	3.47	1.4063	11.25	0.937	7.50
8	6"	0.4337	3.47	1.5125	12.10	0.958	7.66
8	8"	0.4337	3.47	1.7125	13.70	1.630	8.50
8	10"	0.4337	3.47	1.9250	15.40	1.210	9.58
8	12"	0.4337	3.47	2.1250	17.00	1.360	10.88
8	14"	0.4337	3.47	2.2500	18.00	1.562	12.50
8	16"	0.4337	3.47	2.4500	19.60	1.812	14.50
8	18"	0.4337	3.47	2.6500	21.20	2.000	16.00
8	20"	0.4337	3.47	2.8500	22.80	2.125	17.00
8	24"	0.4337	3.47	3.2500	26.00	2.375	19.00

ANSI B1.20.1 NPT Threads Dimensions



NPT Thread Pitch & Size	Dash Size	Male Thread	Female Thread
TPI - Inch	-	(Inch)	(Inch)
27 - 1/8	-02	0.39	0.33
18 - 1/4	-04	0.52	0.44
18 - 3/8	-06	0.65	0.58
14 - 1/2	-08	0.81	0.70
14 - 3/4	-12	1.02	0.92
11 1/2 - 1	-16	1.28	1.16
11 1/2 - 1 1/4	-20	1.62	1.50
11 1/2 - 1 1/2	-24	1.86	1.73
11 1/2 - 2	-32	2.33	2.22
8 - 2 1/2	-40	2.82	2.72
3 - 8	-48	3.44	3.34

ANSI B1.20.1 NPSM Threads Dimensions



NPSM Thread Pitch & Size	Female Thread	Dash
TPI - Inch	inch	Size
27 - 1/8	0.34	-02
18 - 1/4	0.47	-04
18 - 3/8	0.59	-06
14 - 1/2	0.75	-08
14 - 3/4	0.97	-12
11 1/2 - 1	1.20	-16
11 1/2 - 1 1/4	1.55	-20
11 1/2 - 1 1/2	1.79	-24
11 1/2 - 2	2.26	-32
8 - 2 1/2	2.71	-40
8 - 3	3.33	-48