



Table 7a. American National Standard Centralizing Acme Single-Start Screw Threads — Formulas for Determining Diameters (ASME/ANSI B1.5-1988)

No.	D = Nominal Size or Diameter in Inches P = Pitch = 1 ÷ Number of Threads per Inch
1	Classes 2C, 3C, and 4C External Threads (Screws)
2	Major Diam., Max = D (Basic).
3	Major Diam., Min = D minus tolerance from Table 11, cols. 7, 8, or 10.
4	Pitch Diam., Max = Int. Pitch Diam., Min (Formula 9) minus allowance from Table 9, cols. 3, 4, or 5.
5	Pitch Diam., Min = Ext. Pitch Diam., Max (Formula 3) minus tolerance from Table 10.
6	Minor Diam., Max = D minus P minus allowance from Table 11, col. 3.
7	Minor Diam., Min = Ext. Minor Diam., Max (Formula 5) minus $1.5 \times$ Pitch Diam. tolerance from Table 10.
8	Classes 2C, 3C, and 4C Internal Threads (Nuts)
9	Major Diam., Min = D plus allowance from Table 11, col. 4.
10	Major Diam., Max = Int. Major Diam., Min (Formula 7) plus tolerance from Table 11, cols. 7, 9, or 11.
11	Pitch Diam., Min = D minus $P/2$ (Basic).
12	Pitch Diam., Max = Int. Pitch Diam., Min (Formula 9) plus tolerance from Table 10.
13	Minor Diam., Min = D minus $0.9P$.
14	Minor Diam., Max = Int. Minor Diam., Min (Formula 11) plus tolerance from Table 11, col. 6.

Table 7b. Limiting Dimensions of American National Standard Centralizing Acme Single-Start Screw Threads, Classes 2C, 3C, and 4C (ASME/ANSI B1.5-1988)

Limiting Dimensions		Nominal Diameter, D								
		1/2	5/8	3/4	7/8	1	1 1/8	1 1/4	1 3/8	1 1/2
		Threads per Inch*								
		10	8	6	6	5	5	5	4	4
External Threads										
Classes 2C, 3C, and 4C, Major Diameter	Max	0.5000	0.6250	0.7500	0.8750	1.0000	1.1250	1.2500	1.3750	1.5000
Class 2C, Major Diameter	Min	0.4975	0.6222	0.7470	0.8717	0.9965	1.1213	1.2461	1.3709	1.4957
Class 3C, Major Diameter	Min	0.4989	0.6238	0.7487	0.8736	0.9985	1.1234	1.2483	1.3732	1.4982
Class 4C, Major Diameter	Min	0.4993	0.6242	0.7491	0.8741	0.9990	1.1239	1.2489	1.3738	1.4988
Classes 2C, 3C, and 4C, Minor Diameter	Max	0.3800	0.4800	0.5633	0.6883	0.7800	0.9050	1.0300	1.1050	1.2300
Class 2C, Minor Diameter	Min	0.3594	0.4570	0.5371	0.6615	0.7509	0.8753	0.9998	1.0719	1.1965
Class 3C, Minor Diameter	Min	0.3704	0.4693	0.5511	0.6758	0.7664	0.8912	1.0159	1.0896	1.2144
Class 4C, Minor Diameter	Min	0.3731	0.4723	0.5546	0.6794	0.7703	0.8951	1.0199	1.0940	1.2188
Class 2C, Pitch Diameter	Max	0.4443	0.5562	0.6598	0.7842	0.8920	1.0165	1.1411	1.2406	1.3652
	Min	0.4306	0.5408	0.6424	0.7663	0.8726	0.9967	1.1210	1.2186	1.3429
Class 3C, Pitch Diameter	Max	0.4458	0.5578	0.6615	0.7861	0.8940	1.0186	1.1433	1.2430	1.3677
	Min	0.4394	0.5506	0.6534	0.7778	0.8849	1.0094	1.1339	1.2327	1.3573
Class 4C, Pitch Diameter	Max	0.4472	0.5593	0.6632	0.7880	0.8960	1.0208	1.1455	1.2453	1.3701
	Min	0.4426	0.5542	0.6574	0.7820	0.8895	1.0142	1.1388	1.2380	1.3627
Internal Threads										
Classes 2C, 3C, and 4C, Major Diameter	Min	0.5007	0.6258	0.7509	0.8759	1.0010	1.1261	1.2511	1.3762	1.5012
Classes 2C and 3C, Major Diameter	Max	0.5032	0.6286	0.7539	0.8792	1.0045	1.1298	1.2550	1.3803	1.5055
Class 4C, Major Diameter	Max	0.5021	0.6274	0.7526	0.8778	1.0030	1.1282	1.2533	1.3785	1.5036
Classes 2C, 3C, and 4C, Minor Diameter	Min	0.4100	0.5125	0.6000	0.7250	0.8200	0.9450	1.0700	1.1500	1.2750
	Max	0.4150	0.5187	0.6083	0.7333	0.8300	0.9550	1.0800	1.1625	1.2875
Class 2C, Pitch Diameter	Min	0.4500	0.5625	0.6667	0.7917	0.9000	1.0250	1.1500	1.2500	1.3750
	Max	0.4637	0.5779	0.6841	0.8096	0.9194	1.0448	1.1701	1.2720	1.3973
Class 3C, Pitch Diameter	Min	0.4500	0.5625	0.6667	0.7917	0.9000	1.0250	1.1500	1.2500	1.3750
	Max	0.4564	0.5697	0.6748	0.8000	0.9091	1.0342	1.1594	1.2603	1.3854
Class 4C, Pitch Diameter	Min	0.4500	0.5625	0.6667	0.7917	0.9000	1.0250	1.1500	1.2500	1.3750
	Max	0.4546	0.5676	0.6725	0.7977	0.9065	1.0316	1.1567	1.2573	1.3824

* All other dimensions are in inches. The selection of threads per inch is arbitrary and for the purpose of establishing a standard.

Table 7b (Concluded). Limiting Dimensions of Centralizing Acme Single-Start Screw Threads, Classes 2C, 3C, and 4C (ASME/ANSI B1.5-1988)

Limiting Dimensions		Nominal Diameter, D									
		1 3/4	2	2 1/4	2 1/2	2 3/4	3	3 1/2	4	4 1/2	5
		Threads per Inch*									
		4	4	3	3	3	2	2	2	2	2
External Threads											
Classes 2C, 3C, and 4C, Major Diameter	Max	1.7500	2.0000	2.2500	2.5000	2.7500	3.0000	3.5000	4.0000	4.5000	5.0000
Class 2C, Major Diameter	Min	1.7454	1.9951	2.2448	2.4945	2.7442	2.9939	3.4935	3.9930	4.4926	4.9922
Class 3C, Major Diameter	Min	1.7480	1.9979	2.2478	2.4976	2.7475	2.9974	3.4972	3.9970	4.4968	4.9966
Class 4C, Major Diameter	Min	1.7487	1.9986	2.2485	2.4984	2.7483	2.9983	3.4981	3.9980	4.4979	4.9978
Classes 2C, 3C, and 4C, Minor Diameter	Max	1.4800	1.7300	1.8967	2.1467	2.3967	2.4800	2.9800	3.4800	3.9800	4.4800
Class 2C, Minor Diameter	Min	1.4456	1.6948	1.8572	2.1065	2.3558	2.4326	2.9314	3.4302	3.9291	4.4281
Class 3C, Minor Diameter	Min	1.4640	1.7136	1.8783	2.1279	2.3776	2.4579	2.9574	3.4568	3.9563	4.4558
Class 4C, Minor Diameter	Min	1.4685	1.7183	1.8835	2.1333	2.3831	2.4642	2.9638	3.4634	3.9631	4.4627
Class 2C, Pitch Diameter	Max	1.6145	1.8637	2.0713	2.3207	2.5700	2.7360	3.2350	3.7340	4.2330	4.7319
	Min	1.5916	1.8402	2.0450	2.2939	2.5427	2.7044	3.2026	3.7008	4.1991	4.6973
Class 3C, Pitch Diameter	Max	1.6171	1.8665	2.0743	2.3238	2.5734	2.7395	3.2388	3.7380	4.2373	4.7364
	Min	1.6064	1.8555	2.0620	2.3113	2.5607	2.7248	3.2237	3.7225	4.2215	4.7202
Class 4C, Pitch Diameter	Max	1.6198	1.8693	2.0773	2.3270	2.5767	2.7430	3.2425	3.7420	4.2415	4.7409
	Min	1.6122	1.8615	2.0685	2.3181	2.5676	2.7325	3.2317	3.7309	4.2302	4.7294
Internal Threads											
Classes 2C, 3C, and 4C, Major Diameter	Min	1.7513	2.0014	2.2515	2.5016	2.7517	3.0017	3.5019	4.0020	4.5021	5.0022
Classes 2C and 3C, Major Diameter	Max	1.7559	2.0063	2.2567	2.5071	2.7575	3.0078	3.5084	4.0090	4.5095	5.0100
Class 4C, Major Diameter	Max	1.7539	2.0042	2.2545	2.5048	2.7550	3.0052	3.5056	4.0060	4.5063	5.0067
Classes 2C, 3C, and 4C, Minor Diameter	Min	1.5250	1.7750	1.9500	2.2000	2.4500	2.5500	3.0500	3.5500	4.0500	4.5500
	Max	1.5375	1.7875	1.9667	2.2167	2.4667	2.5750	3.0750	3.5750	4.0750	4.5750
Class 2C, Pitch Diameter	Min	1.6250	1.8750	2.0833	2.3333	2.5833	2.7500	3.2500	3.7500	4.2500	4.7500
	Max	1.6479	1.8985	2.1096	2.3601	2.6106	2.7816	3.2824	3.7832	4.2839	4.7846
Class 3C, Pitch Diameter	Min	1.6250	1.8750	2.0833	2.3333	2.5833	2.7500	3.2500	3.7500	4.2500	4.7500
	Max	1.6357	1.8860	2.0956	2.3458	2.5960	2.7647	3.2651	3.7655	4.2658	4.7662
Class 4C, Pitch Diameter	Min	1.6250	1.8750	2.0833	2.3333	2.5833	2.7500	3.2500	3.7500	4.2500	4.7500
	Max	1.6326	1.8828	2.0921	2.3422	2.5924	2.7605	3.2608	3.7611	4.2613	4.7615

* All other dimensions are given in inches. The selection of threads per inch is arbitrary and for the purpose of establishing a standard.

Table 8. American National Standard Centralizing Acme Single-Start Screw Thread Data (ASME/ANSI B1.5-1988)

Identification		Diameters			Thread Data					Lead Angle at Basic Pitch Diameter*	
Nominal Sizes (All Classes)	Threads per Inch, n	Centralizing, Classes 2C, 3C, and 4C			Pitch, P	Thickness at Pitch Line, $t = P/2$	Basic Height of Thread, $h = P/2$	Basic Width of Flat, $F = 0.3707P$		Centralizing Classes 2C, 3C, and 4C, λ	
		Basic Major Diameter, D	Pitch Diameter, $D_2 = (D - h)$	Minor Diameter, $D_1 = (D - 2h)$						Deg	Min
1/4	16	0.2500	0.2188	0.1875	0.06250	0.03125	0.03125	0.0232		5	12
5/16	14	0.3125	0.2768	0.2411	0.07143	0.03571	0.03571	0.0265		4	42
3/8	12	0.3750	0.3333	0.2917	0.08333	0.04167	0.04167	0.0309		4	33
7/16	12	0.4375	0.3958	0.3542	0.08333	0.04167	0.04167	0.0309		3	50
1/2	10	0.5000	0.4500	0.4000	0.10000	0.05000	0.05000	0.0371		4	3
5/8	8	0.6250	0.5625	0.5000	0.12500	0.06250	0.06250	0.0463		4	3
3/4	6	0.7500	0.6667	0.5833	0.16667	0.08333	0.08333	0.0618		4	33
7/8	6	0.8750	0.7917	0.7083	0.16667	0.08333	0.08333	0.0618		3	50
1	5	1.0000	0.9000	0.8000	0.20000	0.10000	0.10000	0.0741		4	3
1 1/8	5	1.1250	1.0250	0.9250	0.20000	0.10000	0.10000	0.0741		3	33
1 1/4	5	1.2500	1.1500	1.0500	0.20000	0.10000	0.10000	0.0741		3	10
1 3/8	4	1.3750	1.2500	1.1250	0.25000	0.12500	0.12500	0.0927		3	39
1 1/2	4	1.5000	1.3750	1.2500	0.25000	0.12500	0.12500	0.0927		3	19
1 3/4	4	1.7500	1.6250	1.5000	0.25000	0.12500	0.12500	0.0927		2	48
2	4	2.0000	1.8750	1.7500	0.25000	0.12500	0.12500	0.0927		2	26
2 1/4	3	2.2500	2.0833	1.9167	0.33333	0.16667	0.16667	0.1236		2	55
2 1/2	3	2.5000	2.3333	2.1667	0.33333	0.16667	0.16667	0.1236		2	36
2 3/4	3	2.7500	2.5833	2.4167	0.33333	0.16667	0.16667	0.1236		2	21
3	2	3.0000	2.7500	2.5000	0.50000	0.25000	0.25000	0.1853		3	19
3 1/2	2	3.5000	3.2500	3.0000	0.50000	0.25000	0.25000	0.1853		2	48
4	2	4.0000	3.7500	3.5000	0.50000	0.25000	0.25000	0.1853		2	26
4 1/2	2	4.5000	4.2500	4.0000	0.50000	0.25000	0.25000	0.1853		2	9
5	2	5.0000	4.7500	4.5000	0.50000	0.25000	0.25000	0.1853		1	55

* All other dimensions are given in inches.