

7 Running and Sliding Fits^a—American National Standard

- RC 1 *Close sliding fits* are intended for the accurate location of parts which must assemble without perceptible play.
- RC 2 *Sliding fits* are intended for accurate location, but with greater maximum clearance than class RC 1. Parts made to this fit move and turn easily but are not intended to run freely, and in the larger sizes may seize with small temperature changes.
- RC 3 *Precision running fits* are about the closest fits which can be expected to run freely and are intended for precision work at slow speeds and light journal pressures, but they are not suitable where appreciable temperature differences are likely to be encountered.
- RC 4 *Close running fits* are intended chiefly for running fits on accurate machinery with moderate surface speeds and journal pressures, where accurate location and minimum play are desired.

Basic hole system. **Limits are in thousandths of an inch.** Limits for hole and shaft are applied algebraically to the basic size to obtain the limits of size for the parts. Data in **boldface** are in accordance with ABC agreements. Symbols H5, g5, etc., are hole and shaft designations used in ABC System.

Nominal Size Range, inches	Class RC 1			Class RC 2			Class RC 3			Class RC 4		
	Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits	
		Hole H5	Shaft g4		Hole H6	Shaft g5		Hole H7	Shaft f6		Hole H8	Shaft f7
0-0.12	0.1 0.45	+0.2 -0	-0.1 -0.25	0.1 0.55	+0.25 -0	-0.1 -0.3	0.3 0.95	+0.4 -0	-0.3 -0.55	0.3 1.3	+0.6 -0	-0.3 -0.7
0.12-0.24	0.15 0.5	+0.2 -0	-0.15 -0.3	0.15 0.65	+0.3 -0	-0.15 -0.35	0.4 1.12	+0.5 -0	-0.4 -0.7	0.4 1.6	+0.7 -0	-0.4 -0.9
0.24-0.40	0.2 0.6	+0.25 -0	-0.2 -0.35	0.2 0.85	+0.4 -0	-0.2 -0.45	0.5 1.5	+0.6 -0	-0.5 -0.9	0.5 2.0	+0.9 -0	-0.5 -1.1
0.40-0.71	0.25 0.75	+0.3 -0	-0.25 -0.45	0.25 0.95	+0.4 -0	-0.25 -0.55	0.6 1.7	+0.7 -0	-0.6 -1.0	0.6 2.3	+1.0 -0	-0.6 -1.3
0.71-1.19	0.3 0.95	+0.4 -0	-0.3 -0.55	0.3 1.2	+0.5 -0	-0.3 -0.7	0.8 2.1	+0.8 -0	-0.8 -1.3	0.8 2.8	+1.2 -0	-0.8 -1.6
1.19-1.97	0.4 1.1	+0.4 -0	-0.4 -0.7	0.4 1.4	+0.6 -0	-0.4 -0.8	1.0 2.6	+1.0 -0	-1.0 -1.6	1.0 3.6	+1.6 -0	-1.0 -2.0
1.97-3.15	0.4 1.2	+0.5 -0	-0.4 -0.7	0.4 1.6	+0.7 -0	-0.4 -0.9	1.2 3.1	+1.2 -0	-1.2 -1.9	1.2 4.2	+1.8 -0	-1.2 -2.4
3.15-4.73	0.5 1.5	+0.6 -0	-0.5 -0.9	0.5 2.0	+0.9 -0	-0.5 -1.1	1.4 3.7	+1.4 -0	-1.4 -2.3	1.4 5.0	+2.2 -0	-1.4 -2.8
4.73-7.09	0.6 1.8	+0.7 -0	-0.6 -1.1	0.6 2.3	+1.0 -0	-0.6 -1.3	1.6 4.2	+1.6 -0	-1.6 -2.6	1.6 5.7	+2.5 -0	-1.6 -3.2
7.09-9.85	0.6 2.0	+0.8 -0	-0.6 -1.2	0.6 2.6	+1.2 -0	-0.6 -1.4	2.0 5.0	+1.8 -0	-2.0 -3.2	2.0 6.6	+2.8 -0	-2.0 -3.8
9.85-12.41	0.8 2.3	+0.9 -0	-0.8 -1.4	0.8 2.9	+1.2 -0	-0.8 -1.7	2.5 5.7	+2.0 -0	-2.5 -3.7	2.5 7.5	+3.0 -0	-2.5 -4.5
12.41-15.75	1.0 2.7	+1.0 -0	-1.0 -1.7	1.0 3.4	+1.4 -0	-1.0 -2.0	3.0 6.6	+2.2 -0	-3.0 -4.4	3.0 8.7	+3.5 -0	-3.0 -5.2

^aFrom ANSI B4.1-1967 (R1994). For larger diameters, see the standard.

7 Running and Sliding Fits^a—American National Standard (continued)

- RC 5 } *Medium running fits* are intended for higher running speeds, or heavy journal pressures, or both.
- RC 6 }
- RC 7 *Free running fits* are intended for use where accuracy is not essential, or where large temperature variations are likely to be encountered, or under both these conditions.
- RC 8 } *Loose running fits* are intended for use where wide commercial tolerances may be necessary, together with an allowance,
- RC 9 } on the external member.

Nominal Size Range, inches	Class RC 5			Class RC 6			Class RC 7			Class RC 8			Class RC 9		
	Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits	
		Hole H8	Shaft e7		Hole H9	Shaft e8		Hole H9	Shaft d8		Hole H10	Shaft c9		Hole H11	Shaft
Over To															
0-0.12	0.6	+0.6	-0.6	0.6	+1.0	-0.6	1.0	+1.0	-1.0	2.5	+1.6	-2.5	4.0	+2.5	-4.0
	1.6	-0	-1.0	2.2	-0	-1.2	2.6	-0	-1.6	5.1	-0	-3.5	8.1	-0	-5.6
0.12-0.24	0.8	+0.7	-0.8	0.8	+1.2	-0.8	1.2	+1.2	-1.2	2.8	+1.8	-2.8	4.5	+3.0	-4.5
	2.0	-0	-1.3	2.7	-0	-1.5	3.1	-0	-1.9	5.8	-0	-4.0	9.0	-0	-6.0
0.24-0.40	1.0	+0.9	-1.0	1.0	+1.4	-1.0	1.6	+1.4	-1.6	3.0	+2.2	-3.0	5.0	+3.5	-5.0
	2.5	-0	-1.6	3.3	-0	-1.9	3.9	-0	-2.5	6.6	-0	-4.4	10.7	-0	-7.2
0.40-0.71	1.2	+1.0	-1.2	1.2	+1.6	-1.2	2.0	+1.6	-2.0	3.5	+2.8	-3.5	6.0	+4.0	-6.0
	2.9	-0	-1.9	3.8	-0	-2.2	4.6	-0	-3.0	7.9	-0	-5.1	12.8	-0	-8.8
0.71-1.19	1.6	+1.2	-1.6	1.6	+2.0	-1.6	2.5	+2.0	-2.5	4.5	+3.5	-4.5	7.0	+5.0	-7.0
	3.6	-0	-2.4	4.8	-0	-2.8	5.7	-0	-3.7	10.0	-0	-6.5	15.5	-0	-10.5
1.19-1.97	2.0	+1.6	-2.0	2.0	+2.5	-2.0	3.0	+2.5	-3.0	5.0	+4.0	-5.0	8.0	+6.0	-8.0
	4.6	-0	-3.0	6.1	-0	-3.6	7.1	-0	-4.6	11.5	-0	-7.5	18.0	-0	-12.0
1.97-3.15	2.5	+1.8	-2.5	2.5	+3.0	-2.5	4.0	+3.0	-4.0	6.0	+4.5	-6.0	9.0	+7.0	-9.0
	5.5	-0	-3.7	7.3	-0	-4.3	8.8	-0	-5.8	13.5	-0	-9.0	20.5	-0	-13.5
3.15-4.73	3.0	+2.2	-3.0	3.0	+3.5	-3.0	5.0	+3.5	-5.0	7.0	+5.0	-7.0	10.0	+9.0	-10.0
	6.6	-0	-4.4	8.7	-0	-5.2	10.7	-0	-7.2	15.5	-0	-10.5	24.0	-0	-15.0
4.73-7.09	3.5	+2.5	-3.5	3.5	+4.0	-3.5	6.0	+4.0	-6.0	8.0	+6.0	-8.0	12.0	+10.0	-12.0
	7.6	-0	-5.1	10.0	-0	-6.0	12.5	-0	-8.5	18.0	-0	-12.0	28.0	-0	-18.0
7.09-9.85	4.0	+2.8	-4.0	4.0	+4.5	-4.0	7.0	+4.5	-7.0	10.0	+7.0	-10.0	15.0	+12.0	-15.0
	8.6	-0	-5.8	11.3	-0	-6.8	14.3	-0	-9.8	21.5	-0	-14.5	34.0	-0	-22.0
9.85-12.41	5.0	+3.0	-5.0	5.0	+5.0	-5.0	8.0	+5.0	-8.0	12.0	+8.0	-12.0	18.0	+12.0	-18.0
	10.0	-0	-7.0	13.0	-0	-8.0	16.0	-0	-11.0	25.0	-0	-17.0	38.0	-0	-26.0
12.41-15.75	6.0	+3.5	-6.0	6.0	+6.0	-6.0	10.0	+6.0	-10.0	14.0	+9.0	-14.0	22.0	+14.0	-22.0
	11.7	-0	-8.2	15.5	-0	-9.5	19.5	-0	-13.5	29.0	-0	-20.0	45.0	-0	-31.0

^aFrom ANSI B4.1-1967 (R1994). For larger diameters, see the standard.

8 Clearance Locational Fits^a—American National Standard

LC *Locational clearance fits* are intended for parts which are normally stationary but which can be freely assembled or disassembled. They run from snug fits for parts requiring accuracy of location, through the medium clearance fits for parts such as spigots, to the looser fastener fits, where freedom of assembly is of prime importance.

Basic hole system. **Limits are in thousandths of an inch.** Limits for hole and shaft are applied algebraically to the basic size to obtain the limits of size for the parts. Data in **boldface** are in accordance with ABC agreements. Symbols H6, H5, etc., are hole and shaft designations used in ABC System.

Nominal Size Range, inches Over To	Class LC 1			Class LC 2			Class LC 3			Class LC 4			Class LC 5		
	Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits	
		Hole H6	Shaft h5		Hole H7	Shaft h6		Hole H8	Shaft h7		Hole H10	Shaft h9		Hole H7	Shaft g6
0-0.12	0	+0.25	+0	0	+0.4	+0	0	+0.6	+0	0	+1.6	+0	0.1	+0.4	-0.1
	0.45	-0	-0.2	0.65	-0	-0.25	1	-0	-0.4	2.6	-0	-1.0	0.75	-0	-0.35
0.12-0.24	0	+0.3	+0	0	+0.5	+0	0	+0.7	+0	0	+1.8	+0	0.15	+0.5	-0.15
	0.5	-0	-0.2	0.8	-0	-0.3	1.2	-0	-0.5	3.0	0	-1.2	0.95	-0	-0.45
0.24-0.40	0	+0.4	+0	0	+0.6	+0	0	+0.9	+0	0	+2.2	+0	0.2	+0.6	-0.2
	0.65	-0	-0.25	1.0	-0	-0.4	1.5	-0	-0.6	3.6	-0	-1.4	1.2	-0	-0.6
0.40-0.71	0	+0.4	+0	0	+0.7	+0	0	+1.0	+0	0	+2.8	+0	0.25	+0.7	-0.25
	0.7	-0	-0.3	1.1	-0	-0.4	1.7	-0	-0.7	4.4	-0	-1.6	1.35	-0	-0.65
0.71-1.19	0	+0.5	+0	0	+0.8	+0	0	+1.2	+0	0	+3.5	+0	0.3	+0.8	-0.3
	0.9	-0	-0.4	1.3	-0	-0.5	2	-0	-0.8	5.5	-0	-2.0	1.6	-0	-0.8
1.19-1.97	0	+0.6	+0	0	+1.0	+0	0	+1.6	+0	0	+4.0	+0	0.4	+1.0	-0.4
	1.0	-0	-0.4	1.6	-0	-0.6	2.6	-0	-1	6.5	-0	-2.5	2.0	-0	-1.0
1.97-3.15	0	+0.7	+0	0	+1.2	+0	0	+1.8	+0	0	+4.5	+0	0.4	+1.2	-0.4
	1.2	-0	-0.5	1.9	-0	-0.7	3	-0	-1.2	7.5	-0	-3	2.3	-0	-1.1
3.15-4.73	0	+0.9	+0	0	+1.4	+0	0	+2.2	+0	0	+5.0	+0	0.5	+1.4	-0.5
	1.5	-0	-0.6	2.3	-0	-0.9	3.6	-0	-1.4	8.5	-0	-3.5	2.8	-0	-1.4
4.73-7.09	0	+1.0	+0	0	+1.6	+0	0	+2.5	+0	0	+6.0	+0	0.6	+1.6	-0.6
	1.7	-0	-0.7	2.6	-0	-1.0	4.1	-0	-1.6	10	-0	-4	3.2	-0	-1.6
7.09-9.85	0	+1.2	+0	0	+1.8	+0	0	+2.8	+0	0	+7.0	+0	0.6	+1.8	-0.6
	2.0	-0	-0.8	3.0	-0	-1.2	4.6	-0	-1.8	11.5	-0	-4.5	3.6	-0	-1.8
9.85-12.41	0	+1.2	+0	0	+2.0	+0	0	+3.0	+0	0	+8.0	+0	0.7	+2.0	-0.7
	2.1	-0	-0.9	3.2	-0	-1.2	5	-0	-2.0	13.0	-0	-5	3.9	-0	-1.9
12.41-15.75	0	+1.4	+0	0	+2.2	+0	0	+3.5	+0	0	+9.0	+0	0.7	+2.2	-0.7
	2.4	-0	-1.0	3.6	-0	-1.4	5.7	-0	-2.2	15.0	-0	-6	4.3	-0	-2.1

^aFrom ANSI B4.1-1967 (R1994). For larger diameters, see the standard.

8 Clearance Locational Fits^a—American National Standard (continued)

Nominal Size Range, inches	Class LC 6			Class LC 7			Class LC 8			Class LC 9			Class LC 10			Class LC 11		
	Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits		Limits of Clearance	Standard Limits	
		H9	Shaft f8		H10	Shaft e9		H10	Shaft d9		H11	Shaft c10		H12	Shaft		H13	Shaft
Over To																		
0-0.12	0.3 1.9	+1.0 -0	-0.3 -0.9	+1.6 -0	-0.6 -1.6	1.0 3.6	+1.6 -0	-1.0 -2.0	2.5 6.6	+2.5 -0	-2.5 -4.1	4 12	+4 -0	-4 -8	5 17	+6 -0	-5 -11	
0.12-0.24	0.4 2.3	+1.2 -0	-0.4 -1.1	+1.8 -0	-0.8 -2.0	0.8 3.8	+1.8 -0	-1.2 -2.4	2.8 7.6	+3.0 -0	-2.8 -4.6	4.5 14.5	+5 -0	-4.5 -9.5	6 20	+7 -0	-6 -13	
0.24-0.40	0.5 2.8	+1.4 -0	-0.5 -1.4	+2.2 -0	-1.0 -2.4	1.0 4.6	+2.2 -0	-1.6 -3.0	3.0 8.7	+3.5 -0	-3.0 -5.2	5 17	+6 -0	-5 -11	7 25	+9 -0	-7 -16	
0.40-0.71	0.6 3.2	+1.6 -0	-0.6 -1.6	+2.8 -0	-1.2 -2.8	1.2 5.6	+2.8 -0	-2.0 -3.6	3.5 10.3	+4.0 -0	-3.5 -6.3	6 20	+7 -0	-6 -13	8 28	+10 -0	-8 -18	
0.71-1.19	0.8 4.0	+2.0 -0	-0.8 -2.0	+3.5 -0	-1.6 -3.6	1.6 7.1	+3.5 -0	-2.5 -4.5	4.5 13.0	+5.0 -0	-4.5 -8.0	7 23	+8 -0	-7 -15	10 34	+12 -0	-10 -22	
1.19-1.97	1.0 5.1	+2.5 -0	-1.0 -2.6	+4.0 -0	-2.0 -4.5	2.0 8.5	+4.0 -0	-3.0 -5.5	5 15	+6 -0	-5 -9	8 28	+10 -0	-8 -18	12 44	+16 -0	-12 -28	
1.97-3.15	1.2 6.0	+3.0 -0	-1.2 -3.0	+4.5 -0	-2.5 -5.5	2.5 10.0	+4.5 -0	-4.0 -7.0	6 17.5	+7 -0	-6 -10.5	10 34	+12 -0	-10 -22	14 50	+18 -0	-14 -32	
3.15-4.73	1.4 7.1	+3.5 -0	-1.4 -3.6	+5.0 -0	-3.0 -6.5	3.0 11.5	+5.0 -0	-5.0 -8.5	7 21	+9 -0	-7 -12	11 39	+14 -0	-11 -25	16 60	+22 -0	-16 -38	
4.73-7.09	1.6 8.1	+4.0 -0	-1.6 -4.1	+6.0 -0	-3.5 -7.5	3.5 13.5	+6.0 -0	-6.0 -10.0	8 24	+10 -0	-8 -14	12 44	+16 -0	-12 -28	18 68	+25 -0	-18 -43	
7.09-9.85	2.0 9.3	+4.5 -0	-2.0 -4.8	+7.0 -0	-4.0 -8.5	4.0 15.5	+7.0 -0	-7.0 -11.5	10 29	+12 -0	-10 -17	16 52	+18 -0	-16 -34	22 78	+28 -0	-22 -50	
9.85-12.41	2.2 10.2	+5.0 -0	-2.2 -5.2	+8.0 -0	-4.5 -9.5	4.5 17.5	+8.0 -0	-8.0 -12.0	12 32	+12 -0	-12 -20	20 60	+20 -0	-20 -40	28 88	+30 -0	-28 -58	
12.41-15.75	2.5 12.0	+6.0 -0	-2.5 -6.0	+9.0 -0	-5.0 -11.0	5.0 20.0	+9.0 -0	-9.0 -14.0	14 37	+14 -0	-14 -23	22 66	+22 -0	-22 -44	30 100	+35 -0	-30 -65	

^aFrom ANSI B4.1-1967 (R1994). For larger diameters, see the standard.

9 Transition Locational Fits^a—American National Standard

LT Transition fits are a compromise between clearance and interference fits, for application where accuracy of location is important, but either a small amount of clearance or interference is permissible.

Basic hole system. **Limits are in thousandths of an inch.** Limits for hole and shaft are applied algebraically to the basic size to obtain the limits of size for the mating parts. Data in **boldface** are in accordance with ABC agreements. "Fit" represents the maximum interference (minus values) and the maximum clearance (plus values). Symbols H7, js6, etc., are hole and shaft designations used in ABC System.

Nominal Size Range, inches	Class LT 1		Class LT 2		Class LT 3		Class LT 4		Class LT 5		Class LT 6				
	Fit	Standard Limits		Fit	Standard Limits		Fit	Standard Limits		Fit	Standard Limits				
		H7	Shaft js6		H8	Shaft js7		H7	Shaft k6		H8	Shaft k7	H7	Shaft n6	H7
Over To															
0-0.12	-0.10 +0.50	+0.10 -0.10	+0.6 -0	+0.2 -0.2						-0.5 +0.15	+0.4 -0	+0.5 +0.25	-0.65 +0.15	+0.4 -0	+0.65 +0.25
0.12-0.24	-0.15 +0.65	+0.15 -0.15	+0.7 -0	+0.25 -0.25						-0.6 +0.2	+0.5 -0	+0.6 +0.3	-0.8 +0.2	+0.5 -0	+0.8 +0.3
0.24-0.40	-0.2 +0.8	+0.2 -0.2	+0.9 -0	+0.3 -0.3						-0.7 +0.8	+0.6 -0	+0.5 +0.1	-0.8 +0.2	+0.7 -0	+1.0 +0.4
0.40-0.71	-0.2 +0.9	+0.2 -0.2	+1.0 -0	+0.35 -0.35						-0.8 +0.9	+0.7 -0	+0.5 +0.1	-0.9 +0.2	+0.8 -0	+1.2 +0.5
0.71-1.19	-0.25 +1.05	+0.25 -0.25	+1.2 -0	+0.4 -0.4						-0.9 +1.1	+0.8 -0	+0.6 +0.1	-1.1 +0.2	+0.8 -0	+1.4 +0.6
1.19-1.97	-0.3 +1.3	+0.3 -0.3	+1.6 -0	+0.5 -0.5						-1.1 +1.5	+1.0 -0	+0.7 +0.1	-1.3 +0.3	+1.0 -0	+1.7 +0.7
1.97-3.15	-0.3 +1.5	+0.3 -0.3	+1.8 -0	+0.6 -0.6						-1.3 +1.7	+1.3 -0	+0.8 +0.1	-1.5 +0.4	+1.2 -0	+2.0 +0.8
3.15-4.73	-0.4 +1.8	+0.4 -0.4	+2.2 -0	+0.7 -0.7						-1.5 +2.1	+1.5 -0	+1.0 +0.1	-1.9 +0.4	+1.4 -0	+2.4 +1.0
4.73-7.09	-0.5 +2.1	+0.5 -0.5	+2.5 -0	+0.8 -0.8						-1.7 +2.4	+1.7 -0	+1.1 +0.1	-2.2 +0.4	+1.6 -0	+2.8 +1.2
7.09-9.85	-0.6 +2.4	+0.6 -0.6	+2.8 -0	+0.9 -0.9						-2.0 +2.6	+2.0 -0	+1.4 +0.2	-2.6 +0.4	+1.8 -0	+3.2 +1.4
9.85-12.41	-0.6 +2.6	+0.6 -0.6	+3.0 -0	+1.0 -1.0						-2.2 +2.8	+2.2 -0	+1.4 +0.2	-2.6 +0.6	+2.0 -0	+3.4 +1.4
12.41-15.75	-0.7 +2.9	+0.7 -0.7	+3.5 -1.0	+1.0 -1.0						-2.4 +3.3	+3.5 -0	+2.4 +0.2	-2.4 +0.6	+2.2 -0	+3.8 +1.6

^aFrom ANSI B4.1-1967 (R1994). For larger diameters, see the standard.

10 Interference Locational Fits^a—American National Standard

LN *Locational interference fits* are used where accuracy of location is of prime importance and for parts requiring rigidity and alignment with no special requirements for bore pressure. Such fits are not intended for parts designed to transmit frictional loads from one part to another by virtue of the tightness of fit, as these conditions are covered by force fits.

Basic hole system. **Limits are in thousandths of an inch.** Limits for hole and shaft are applied algebraically to the basic size to obtain the limits of size for the parts. Data in **boldface** are in accordance with ABC agreements. Symbols H7, p6, etc., are hole and shaft designations used in ABC System.

Nominal Size Range, inches	Class LN 1			Class LN 2			Class LN 3		
	Limits of Interference	Standard Limits		Limits of Interference	Standard Limits		Limits of Interference	Standard Limits	
		Hole H6	Shaft n5		Hole H7	Shaft p6		Hole H7	Shaft r6
0–0.12	0 0.45	+0.25 –0	+0.45 +0.25	0 0.65	+0.4 –0	+0.65 +0.4	0.1 0.75	+0.4 –0	+0.75 +0.5
0.12–0.24	0 0.5	+0.3 –0	+0.5 +0.3	0 0.8	+0.5 –0	+0.8 +0.5	0.1 0.9	+0.5 –0	+0.9 +0.6
0.24–0.40	0 0.65	+0.4 –0	+0.65 +0.4	0 1.0	+0.6 –0	+1.0 +0.6	0.2 1.2	+0.6 –0	+1.2 +0.8
0.40–0.71	0 0.8	+0.4 –0	+0.8 +0.4	0 1.1	+0.7 –0	+1.1 +0.7	0.3 1.4	+0.7 –0	+1.4 +1.0
0.71–1.19	0 1.0	+0.5 –0	+1.0 +0.5	0 1.3	+0.8 –0	+1.3 +0.8	0.4 1.7	+0.8 –0	+1.7 +1.2
1.19–1.97	0 1.1	+0.6 –0	+1.1 +0.6	0 1.6	+1.0 –0	+1.6 +1.0	0.4 2.0	+1.0 –0	+2.0 +1.4
1.97–3.15	0.1 1.3	+0.7 –0	+1.3 +0.7	0.2 2.1	+1.2 –0	+2.1 +1.4	0.4 2.3	+1.2 –0	+2.3 +1.6
3.15–4.73	0.1 1.6	+0.9 –0	+1.6 +1.0	0.2 2.5	+1.4 –0	+2.5 +1.6	0.6 2.9	+1.4 –0	+2.9 +2.0
4.73–7.09	0.2 1.9	+1.0 –0	+1.9 +1.2	0.2 2.8	+1.6 –0	+2.8 +1.8	0.9 3.5	+1.6 –0	+3.5 +2.5
7.09–9.85	0.2 2.2	+1.2 –0	+2.2 +1.4	0.2 3.2	+1.8 –0	+3.2 +2.0	1.2 4.2	+1.8 –0	+4.2 +3.0
9.85–12.41	0.2 2.3	+1.2 –0	+2.3 +1.4	0.2 3.4	+2.0 –0	+3.4 +2.2	1.5 4.7	+2.0 –0	+4.7 +3.5

^aFrom ANSI B4.1-1967 (R1994). For larger diameters, see the standard.

1.1. Transition fit size 5 combination between shaft and hole. See table 10.1 for details.

11 Force and Shrink Fits^a—American National Standard

- FN 1 *Light drive fits* are those requiring light assembly pressures, and produce more or less permanent assemblies. They are suitable for thin sections or long fits, or in cast-iron external members.
- FN 2 *Medium drive fits* are suitable for ordinary steel parts, or for shrink fits on light sections. They are about the tightest fits that can be used with high-grade cast-iron external members.
- FN 3 *Heavy drive fits* are suitable for heavier steel parts or for shrink fits in medium sections.
- FN 4 } Force fits are suitable for parts which can be highly stressed, or for shrink fits where the heavy pressing forces required are impractical.
- FN 5 }

Basic hole system. **Limits are in thousandths of an inch.** Limits for hole and shaft are applied algebraically to the basic size to obtain the limits of size for the parts. Data in **boldface** are in accordance with ABC agreements. Symbols H7, s6, etc., are hole and shaft designations used in ABC System.

Nominal Size Range, inches	Class FN 1				Class FN 2				Class FN 3				Class FN 4				Class FN 5				
	Limits of Interference		Standard Limits		Limits of Interference		Standard Limits		Limits of Interference		Standard Limits		Limits of Interference		Standard Limits		Limits of Interference		Standard Limits		
	Hole H6	Shaft s6	Hole H7	Shaft s6	Hole H7	Shaft s6	Hole H7	Shaft t6	Hole H7	Shaft u6	Hole H8	Shaft x7	Hole H7	Shaft u6	Hole H8	Shaft x7	Hole H7	Shaft u6	Hole H8	Shaft x7	
0-0.12	0.05	+0.25	+0.4	+0.85	0.2	+0.4	+0.85			0.3	+0.4	+0.95	0.3	+0.4	+0.6	+1.3			0.3	+0.6	+1.3
	0.5	-0	-0	0.85	-0	-0	0.6				-0	+0.7	1.3	-0	-0	0.9			1.3	-0	0.9
0.12-0.24	0.1	+0.3	+0.6	+1.0	0.2	+0.5	+1.0			0.4	+0.5	+1.2	0.5	+0.5	+0.7	+1.7			0.5	+0.7	+1.7
	0.6	-0	+0.4	0.7	1.0	-0	0.7			1.2	-0	0.9	1.7	-0	-0	1.2			1.7	-0	1.2
0.24-0.40	0.1	+0.4	+0.75	+1.4	0.4	+0.6	+1.4			0.6	+0.6	+1.6	0.5	+0.6	+1.2	+2.0			0.5	+0.9	+2.0
	0.75	-0	+0.5	1.0	1.4	-0	1.0			1.6	-0	1.2	2.0	-0	-0	1.4			2.0	-0	1.4
0.40-0.56	0.1	+0.4	+0.8	+1.6	0.5	+0.7	+1.6			0.7	+0.7	+1.8	0.6	+0.7	+1.8	+2.3			0.6	+1.0	+2.3
	0.8	-0	+0.5	1.2	1.6	-0	1.2			1.8	-0	1.4	2.3	-0	-0	1.6			2.3	-0	1.6
0.56-0.71	0.2	+0.4	+0.9	+1.6	0.5	+0.7	+1.6			0.7	+0.7	+1.8	0.8	+0.7	+1.8	+2.5			0.8	+1.0	+2.5
	0.9	-0	+0.6	1.2	1.6	-0	1.2			1.8	-0	1.4	2.5	-0	-0	1.8			2.5	-0	1.8
0.71-0.95	0.2	+0.5	+1.1	+1.9	0.6	+0.8	+1.9			0.8	+0.8	+2.1	1.0	+0.8	+2.1	+3.0			1.0	+1.2	+3.0
	1.1	-0	+0.7	1.4	1.9	-0	1.4			2.1	-0	1.6	3.0	-0	-0	2.2			3.0	-0	2.2
0.95-1.19	0.3	+0.5	+1.2	+1.8	0.6	+0.8	+1.8			0.8	+0.8	+2.1	1.3	+0.8	+2.1	+3.3			1.3	+1.2	+3.3
	1.2	-0	+0.8	1.4	1.9	-0	1.4			2.1	-0	1.6	3.3	-0	-0	2.5			3.3	-0	2.5
1.19-1.58	0.3	+0.6	+1.3	+2.4	0.8	+1.0	+2.4			1.0	+1.0	+2.6	1.4	+1.0	+2.6	+4.0			1.4	+1.6	+4.0
	1.3	-0	+0.9	1.8	2.4	-0	1.8			2.6	-0	2.0	4.0	-0	-0	3.0			4.0	-0	3.0

^aANSI B4.1-1967 (R1994).

11 Force and Shrink Fits^a—American National Standard (continued)

Nominal Size Range, inches	Class FN 1			Class FN 2			Class FN 3			Class FN 4			Class FN 5		
	Limits of Interference	Standard Limits		Limits of Interference	Standard Limits		Limits of Interference	Standard Limits		Limits of Interference	Standard Limits		Limits of Interference	Standard Limits	
		Hole H6	Shaft s6		Hole H7	Shaft s6		Hole H7	Shaft t6		Hole H7	Shaft u6		Hole H8	Shaft x7
Over To															
1.58-1.97	0.4 1.4	+0.6 -0	+1.4 -1.0	0.8 2.4	+1.0 -0	+2.4 +1.8	1.2 2.8	+1.0 -0	+2.8 +2.2	1.8 3.4	+1.0 -0	+3.4 +2.8	2.4 5.0	+1.6 -0	+5.0 +4.0
1.97-2.56	0.6 1.8	+0.7 -0	+1.8 +1.3	0.8 2.7	+1.2 -0	+2.7 +2.0	1.3 3.2	+1.2 -0	+3.2 +2.5	2.3 4.2	+1.2 -0	+4.2 +3.5	3.2 6.2	+1.8 -0	+6.2 +5.0
2.56-3.15	0.7 1.9	+0.7 -0	+1.9 +1.4	1.0 2.9	+1.2 -0	+2.9 +2.2	1.8 3.7	+1.2 -0	+3.7 +3.0	2.8 4.7	+1.2 -0	+4.7 +4.0	4.2 7.2	+1.8 -0	+7.2 +6.0
3.15-3.94	0.9 2.4	+0.9 -0	+2.4 +1.8	1.4 3.7	+1.4 -0	+3.7 +2.8	2.1 4.4	+1.4 -0	+4.4 +3.5	3.6 5.9	+1.4 -0	+5.9 +5.0	4.8 8.4	+2.2 -0	+8.4 +7.0
3.94-4.73	1.1 2.6	+0.9 -0	+2.6 +2.0	1.6 3.9	+1.4 -0	+3.9 +3.0	2.6 4.9	+1.4 -0	+4.9 +4.0	4.6 6.9	+1.4 -0	+6.9 +6.0	5.8 9.4	+2.2 -0	+9.4 +8.0
4.73-5.52	1.2 2.9	+1.0 -0	+2.9 +2.2	1.9 4.5	+1.6 -0	+4.5 +3.5	3.4 6.0	+1.6 -0	+6.0 +5.0	5.4 8.0	+1.6 -0	+8.0 +7.0	7.5 11.6	+2.5 -0	+11.6 +10.0
5.52-6.30	1.5 3.2	+1.0 -0	+3.2 +2.5	2.4 5.0	+1.6 -0	+5.0 +4.0	3.4 6.0	+1.6 -0	+6.0 +5.0	5.4 8.0	+1.6 -0	+8.0 +7.0	9.5 13.6	+2.5 -0	+13.6 +12.0
6.30-7.09	1.8 3.5	+1.0 -0	+3.5 +2.8	2.9 5.5	+1.6 -0	+5.5 +4.5	4.4 7.0	+1.6 -0	+7.0 +6.0	6.4 9.0	+1.6 -0	+9.0 +8.0	9.5 13.6	+2.5 -0	+13.6 +12.0
7.09-7.88	1.8 3.8	+1.2 -0	+3.8 +3.0	3.2 6.2	+1.8 -0	+6.2 +5.0	5.2 8.2	+1.8 -0	+8.2 +7.0	7.2 10.2	+1.8 -0	+10.2 +9.0	11.2 15.8	+2.8 -0	+15.8 +14.0
7.88-8.86	2.3 4.3	+1.2 -0	+4.3 +3.5	3.2 6.2	+1.8 -0	+6.2 +5.0	5.2 8.2	+1.8 -0	+8.2 +7.0	8.2 11.2	+1.8 -0	+11.2 +10.0	13.2 17.8	+2.8 -0	+17.8 +16.0
8.86-9.85	2.3 4.3	+1.2 -0	+4.3 +3.5	4.2 7.2	+1.8 -0	+7.2 +6.0	6.2 9.2	+1.8 -0	+9.2 +8.0	10.2 13.2	+1.8 -0	+13.2 +12.0	13.2 17.8	+2.8 -0	+17.8 +16.0
9.85-11.03	2.8 4.9	+1.2 -0	+4.9 +4.0	4.0 7.2	+2.0 -0	+7.2 +6.0	7.0 10.2	+2.0 -0	+10.2 +9.0	10.0 13.2	+2.0 -0	+13.2 +12.0	15.0 20.0	+3.0 -0	+20.0 +18.0
11.03-12.41	2.8 4.9	+1.2 -0	+4.9 +4.0	5.0 8.2	+2.0 -0	+8.2 +7.0	7.0 10.2	+2.0 -0	+10.2 +9.0	12.0 15.2	+2.0 -0	+15.2 +14.0	17.0 22.0	+3.0 -0	+22.0 +20.0
12.41-13.98	3.1 5.5	+1.4 -0	+5.5 +4.5	5.8 9.4	+2.2 -0	+9.4 +8.0	7.8 11.4	+2.2 -0	+11.4 +10.0	13.8 17.4	+2.2 -0	+17.4 +16.0	18.5 24.2	+3.5 +0	+24.2 +22.0

^aFrom ANSI B4.1-1967 (R1994). For larger diameters, see the standard.

12 International Tolerance Grades^a

Dimensions are in millimeters.

Basic Sizes		Tolerance Grades ^b																	
Over	Including	IT01	IT0	IT1	IT2	IT3	IT4	IT5	IT6	IT7	IT8	IT9	IT10	IT11	IT12	IT13	IT14	IT15	IT16
0	3	0.0003	0.0005	0.0008	0.0012	0.002	0.003	0.004	0.006	0.010	0.014	0.025	0.040	0.060	0.100	0.140	0.250	0.400	0.600
3	6	0.0004	0.0006	0.001	0.0015	0.0025	0.004	0.005	0.008	0.012	0.018	0.030	0.048	0.075	0.120	0.180	0.300	0.480	0.750
6	10	0.0004	0.0006	0.001	0.0015	0.0025	0.004	0.006	0.009	0.015	0.022	0.036	0.058	0.090	0.150	0.220	0.360	0.580	0.900
10	18	0.0005	0.0008	0.0012	0.002	0.003	0.005	0.008	0.011	0.018	0.027	0.043	0.070	0.110	0.180	0.270	0.430	0.700	1.100
18	30	0.0006	0.001	0.0015	0.0025	0.004	0.006	0.009	0.013	0.021	0.033	0.052	0.084	0.130	0.210	0.330	0.520	0.840	1.300
30	50	0.0006	0.001	0.0015	0.0025	0.004	0.007	0.011	0.016	0.025	0.039	0.062	0.100	0.160	0.250	0.390	0.620	1.000	1.600
50	80	0.0008	0.0012	0.002	0.003	0.005	0.008	0.012	0.019	0.030	0.046	0.074	0.120	0.190	0.300	0.460	0.740	1.200	1.900
80	120	0.001	0.0015	0.0025	0.004	0.006	0.010	0.015	0.022	0.035	0.054	0.087	0.140	0.220	0.350	0.540	0.870	1.400	2.200
120	180	0.0012	0.002	0.0035	0.005	0.008	0.012	0.018	0.025	0.040	0.063	0.100	0.160	0.250	0.400	0.630	1.000	1.600	2.500
180	250	0.002	0.003	0.0045	0.007	0.010	0.016	0.023	0.032	0.052	0.081	0.130	0.210	0.320	0.520	0.810	1.300	2.100	3.200
250	315	0.0025	0.004	0.006	0.009	0.013	0.018	0.025	0.036	0.057	0.089	0.140	0.230	0.360	0.570	0.890	1.400	2.300	3.600
315	400	0.003	0.005	0.007	0.009	0.013	0.018	0.025	0.036	0.057	0.089	0.140	0.230	0.360	0.570	0.890	1.400	2.300	3.600
400	500	0.004	0.006	0.008	0.010	0.015	0.020	0.027	0.040	0.063	0.097	0.155	0.250	0.400	0.630	0.970	1.550	2.500	4.000
500	630	0.0045	0.006	0.009	0.011	0.016	0.022	0.030	0.044	0.070	0.110	0.175	0.280	0.440	0.700	1.100	1.750	2.800	4.400
630	800	0.005	0.007	0.010	0.013	0.018	0.025	0.035	0.050	0.080	0.125	0.200	0.320	0.500	0.800	1.250	2.000	3.200	5.000
800	1000	0.0055	0.008	0.011	0.015	0.021	0.029	0.040	0.056	0.090	0.140	0.230	0.360	0.560	0.900	1.400	2.300	3.600	5.600
1000	1250	0.0065	0.009	0.013	0.018	0.024	0.034	0.046	0.066	0.105	0.165	0.260	0.420	0.660	1.050	1.650	2.600	4.200	6.600
1250	1600	0.008	0.011	0.015	0.021	0.029	0.040	0.054	0.078	0.125	0.195	0.310	0.500	0.780	1.250	1.950	3.100	5.000	7.800
1600	2000	0.009	0.013	0.018	0.025	0.035	0.048	0.065	0.092	0.150	0.230	0.370	0.600	0.920	1.500	2.300	3.700	6.000	9.200
2000	2500	0.011	0.015	0.022	0.030	0.041	0.057	0.077	0.110	0.175	0.280	0.440	0.700	1.100	1.750	2.800	4.400	7.000	11.000
2500	3150	0.013	0.018	0.026	0.036	0.050	0.069	0.093	0.135	0.210	0.330	0.540	0.860	1.350	2.100	3.300	5.400	8.600	13.500

^aFrom ANSI B4.2-1978 (R1994).

^bIT Values for tolerance grades larger than IT16 can be calculated by using the formulas: IT17 = IT × 10, IT18 = IT13 × 10, etc.

13 Preferred Metric Hole Basis Clearance Fits^a—American National Standard

Dimensions are in millimeters.

Basic Size	Loose Running			Free Running			Close Running			Sliding			Locational Clearance		
	Hole H11	Shaft c11	Fit	Hole H9	Shaft d9	Fit	Hole H8	Shaft f7	Fit	Hole H7	Shaft g6	Fit	Hole H7	Shaft h6	Fit
1	Max	1.060	0.940	1.025	0.980	0.070	1.014	0.994	0.030	1.010	0.998	0.018	1.010	1.000	0.016
	Min	1.060	0.880	1.000	0.955	0.020	1.000	0.984	0.006	1.000	0.992	0.002	1.000	0.994	0.000
1.2	Max	1.260	1.140	1.225	1.180	0.070	1.214	1.194	0.030	1.210	1.198	0.018	1.210	1.200	0.016
	Min	1.200	1.080	1.200	1.155	0.020	1.200	1.184	0.036	1.200	1.192	0.002	1.200	1.194	0.000
1.6	Max	1.660	1.540	1.625	1.580	0.070	1.614	1.594	0.030	1.610	1.598	0.018	1.610	1.600	0.016
	Min	1.600	1.480	1.600	1.555	0.020	1.600	1.584	0.006	1.600	1.592	0.002	1.600	1.594	0.000
2	Max	2.060	1.940	2.025	1.980	0.070	2.014	1.994	0.030	2.010	1.998	0.018	2.010	2.000	0.016
	Min	2.000	1.880	2.000	1.955	0.020	2.000	1.984	0.006	2.000	1.992	0.002	2.000	1.994	0.000
2.5	Max	2.560	2.440	2.525	2.480	0.070	2.514	2.494	0.030	2.510	2.498	0.018	2.510	2.500	0.016
	Min	2.500	2.380	2.500	2.455	0.020	2.500	2.484	0.006	2.500	2.492	0.002	2.500	2.494	0.000
3	Max	3.060	2.940	3.025	2.980	0.070	3.014	2.994	0.030	3.010	2.998	0.018	3.010	3.000	0.016
	Min	3.000	2.880	3.000	2.955	0.020	3.000	2.984	0.006	3.000	2.992	0.002	3.000	2.994	0.000
4	Max	4.075	3.930	4.030	3.970	0.090	4.018	3.990	0.040	4.012	3.996	0.024	4.012	4.000	0.020
	Min	4.000	3.855	4.000	3.940	0.030	4.000	3.978	0.010	4.000	3.988	0.004	4.000	3.992	0.000
5	Max	5.075	4.930	5.030	4.970	0.090	5.018	4.990	0.040	5.012	4.996	0.024	5.012	5.000	0.020
	Min	5.000	4.855	5.000	4.940	0.030	5.000	4.978	0.010	5.000	4.988	0.004	5.000	4.992	0.000
6	Max	6.075	5.930	6.030	5.970	0.090	6.018	5.990	0.040	6.012	5.996	0.024	6.012	6.000	0.020
	Min	6.000	5.855	6.000	5.940	0.030	6.000	5.978	0.010	6.000	5.988	0.004	6.000	5.992	0.000
8	Max	8.090	7.920	8.036	7.960	0.112	8.022	7.987	0.050	8.015	7.995	0.029	8.015	8.000	0.024
	Min	8.000	7.830	8.000	7.924	0.040	8.000	7.972	0.013	8.000	7.986	0.005	8.000	7.991	0.000
10	Max	10.090	9.920	10.036	9.960	0.112	10.022	9.987	0.050	10.015	9.995	0.029	10.015	10.000	0.024
	Min	10.000	9.830	10.000	9.924	0.040	10.000	9.972	0.013	10.000	9.986	0.005	10.000	9.991	0.000
12	Max	12.110	11.905	12.043	11.950	0.136	12.027	11.984	0.061	12.018	11.994	0.035	12.018	12.000	0.029
	Min	12.000	11.795	12.000	11.907	0.050	12.000	11.966	0.016	12.000	11.983	0.006	12.000	11.989	0.000
16	Max	16.110	15.905	16.043	15.950	0.136	16.027	15.984	0.061	16.018	15.994	0.035	16.018	16.000	0.029
	Min	16.000	15.795	16.000	15.907	0.050	16.000	15.966	0.016	16.000	15.983	0.006	16.000	15.989	0.000
20	Max	20.130	19.890	20.052	19.935	0.169	20.033	19.980	0.074	20.021	19.993	0.041	20.021	20.000	0.034
	Min	20.000	19.760	20.000	19.883	0.065	20.000	19.959	0.020	20.000	19.980	0.007	20.000	19.987	0.000
25	Max	25.130	24.890	25.052	24.935	0.169	25.033	24.980	0.074	25.021	24.993	0.041	25.021	25.000	0.034
	Min	25.000	24.760	25.000	24.883	0.065	25.000	24.959	0.020	25.000	24.980	0.007	25.000	24.987	0.000
30	Max	30.130	29.890	30.052	29.935	0.169	30.033	29.980	0.074	30.021	29.993	0.041	30.021	30.000	0.034
	Min	30.000	29.760	30.000	29.883	0.065	30.000	29.959	0.020	30.000	29.980	0.007	30.000	29.987	0.000

^aFrom ANSI B4.2-1978 (R1994).

**13 Preferred Metric Hole Basis Clearance Fits^a—
American National Standard (continued)**

Dimensions are in millimeters.

Basic Size	Loose Running			Free Running			Close Running			Sliding			Locational Clearance		
	Hole H11	Shaft c11	Fit	Hole H9	Shaft d9	Fit	Hole H8	Shaft f7	Fit	Hole H7	Shaft g6	Fit	Hole H7	Shaft h6	Fit
40	Max 40.160	39.880	0.440	40.062	39.920	0.204	40.039	39.975	0.089	40.025	39.991	0.050	40.025	40.000	0.041
	Min 40.000	39.720	0.120	40.000	39.858	0.080	40.000	39.950	0.025	40.000	39.975	0.009	40.000	39.984	0.000
50	Max 50.160	49.870	0.450	50.062	49.920	0.204	50.039	49.975	0.089	50.025	49.991	0.050	50.025	50.000	0.041
	Min 50.000	49.710	0.130	50.000	49.858	0.080	50.000	49.950	0.025	50.000	49.975	0.009	50.000	49.984	0.000
60	Max 60.190	59.860	0.520	60.074	59.900	0.248	60.046	59.970	0.106	60.030	59.990	0.059	60.030	60.000	0.049
	Min 60.000	59.670	0.140	60.000	59.826	0.100	60.000	59.940	0.030	60.000	59.971	0.010	60.000	59.981	0.000
80	Max 80.190	79.950	0.530	80.074	79.900	0.248	80.046	79.970	0.106	80.030	79.990	0.059	80.030	80.000	0.049
	Min 80.000	79.660	0.150	80.000	79.826	0.100	80.000	79.940	0.030	80.000	79.971	0.010	80.000	79.981	0.000
100	Max 100.220	99.830	0.610	100.087	99.880	0.294	100.054	99.964	0.125	100.035	99.988	0.069	100.035	100.000	0.057
	Min 100.000	99.610	0.170	100.000	99.793	0.120	100.000	99.929	0.036	100.000	99.966	0.012	100.000	99.978	0.000
120	Max 120.220	119.820	0.620	120.087	119.880	0.294	120.054	119.964	0.125	120.035	119.988	0.069	120.035	120.000	0.057
	Min 120.000	119.600	0.180	120.000	119.793	0.120	120.000	119.929	0.036	120.000	119.966	0.012	120.000	119.978	0.000
160	Max 160.250	159.790	0.710	160.100	159.855	0.345	160.063	159.957	0.146	160.000	159.986	0.079	160.040	160.000	0.065
	Min 160.000	159.540	0.210	160.000	159.755	0.145	160.000	159.917	0.043	160.000	159.961	0.014	160.000	159.975	0.000
200	Max 200.290	199.760	0.820	200.115	199.830	0.400	200.072	199.950	0.168	200.046	199.985	0.090	200.046	200.000	0.075
	Min 200.000	199.470	0.240	200.000	199.715	0.170	200.000	199.904	0.050	200.000	199.956	0.015	200.000	199.971	0.000
250	Max 250.290	249.720	0.860	250.115	249.830	0.400	250.072	249.950	0.168	250.046	249.985	0.090	250.046	250.000	0.075
	Min 250.000	249.430	0.280	250.000	249.715	0.170	250.000	249.904	0.050	250.000	249.956	0.015	250.000	249.971	0.000
300	Max 300.320	299.670	0.970	300.130	299.810	0.450	300.081	299.944	0.189	300.052	299.983	0.101	300.052	300.000	0.084
	Min 300.000	299.350	0.330	300.000	299.680	0.190	300.000	299.892	0.056	300.000	299.951	0.017	300.000	299.968	0.000
400	Max 400.360	399.600	1.120	400.140	399.790	0.490	400.089	399.938	0.208	400.057	399.982	0.111	400.057	400.000	0.093
	Min 400.000	399.240	0.400	400.000	399.650	0.210	400.000	399.881	0.062	400.000	399.946	0.018	400.000	399.964	0.000
500	Max 500.400	499.520	1.280	500.155	499.770	0.540	500.097	499.932	0.228	500.063	499.980	0.123	500.063	500.000	0.103
	Min 500.000	499.120	0.480	500.000	499.615	0.230	500.000	499.869	0.068	500.000	499.940	0.020	500.000	499.960	0.000

^aFrom ANSI B4.2-1978 (R1994).

**14 Preferred Metric Hole Basis Transition and Interference Fits^a—
American National Standard**

Dimensions are in millimeters.

Basic Size	Locational Transn.			Locational Transn.			Locational Interf.			Medium Drive			Force			
	Hole H7	Shaft k6	Fit	Hole H7	Shaft n6	Fit	Hole H7	Shaft p6	Fit	Hole H7	Shaft a6	Fit	Hole H7	Shaft u6	Fit	
1	Max	1.010	1.006	0.010	1.010	1.010	0.006	1.010	1.012	0.004	1.010	1.020	-0.004	1.010	1.024	-0.008
	Min	1.000	1.000	-0.006	1.000	1.004	-0.010	1.000	1.006	-0.012	1.000	1.014	-0.020	1.000	1.018	-0.024
1.2	Max	1.210	1.206	0.010	1.210	1.210	0.006	1.210	1.212	0.004	1.210	1.220	-0.004	1.210	1.224	-0.008
	Min	1.200	1.200	-0.006	1.200	1.204	-0.010	1.200	1.206	-0.012	1.200	1.214	-0.020	1.200	1.218	-0.024
1.6	Max	1.610	1.606	0.010	1.610	1.610	0.006	1.610	1.612	0.004	1.610	1.620	-0.004	1.610	1.624	-0.008
	Min	1.600	1.600	-0.006	1.600	1.604	-0.010	1.600	1.606	-0.012	1.600	1.614	-0.020	1.600	1.618	-0.024
2	Max	2.010	2.006	0.010	2.010	2.010	0.006	2.010	2.012	0.004	2.010	2.020	-0.004	2.010	2.024	-0.008
	Min	2.000	2.000	-0.006	2.000	2.004	-0.010	2.000	2.006	-0.012	2.000	2.014	-0.020	2.000	2.018	-0.024
2.5	Max	2.510	2.506	0.010	2.510	2.510	0.006	2.510	2.512	0.004	2.510	2.520	-0.004	2.510	2.524	-0.008
	Min	2.500	2.500	-0.006	2.500	2.504	-0.010	2.500	2.506	-0.012	2.500	2.514	-0.020	2.500	2.518	-0.024
3	Max	3.010	3.006	0.010	3.010	3.010	0.006	3.010	3.012	0.004	3.010	3.020	-0.004	3.010	3.024	-0.008
	Min	3.000	3.000	-0.006	3.000	3.004	-0.010	3.000	3.006	-0.012	3.000	3.014	-0.020	3.000	3.018	-0.024
4	Max	4.012	4.009	0.011	4.012	4.016	0.004	4.012	4.020	0.000	4.012	4.027	-0.007	4.012	4.031	-0.011
	Min	4.000	4.001	-0.009	4.000	4.008	-0.016	4.000	4.012	-0.020	4.000	4.019	-0.027	4.000	4.023	-0.031
5	Max	5.012	5.009	0.011	5.012	5.016	0.004	5.012	5.020	0.000	5.012	5.027	-0.007	5.012	5.031	-0.011
	Min	5.000	5.001	-0.009	5.000	5.008	-0.016	5.000	5.012	-0.020	5.000	5.019	-0.027	5.000	5.023	-0.031
6	Max	6.012	6.009	0.011	6.012	6.016	0.004	6.012	6.020	0.000	6.012	6.027	-0.007	6.012	6.031	-0.011
	Min	6.000	6.001	-0.009	6.000	6.008	-0.016	6.000	6.012	-0.020	6.000	6.019	-0.027	6.000	6.023	-0.031
8	Max	8.015	8.010	0.014	8.015	8.019	0.005	8.015	8.024	0.000	8.015	8.032	-0.008	8.015	8.037	-0.013
	Min	8.000	8.001	-0.010	8.000	8.010	-0.019	8.000	8.015	-0.024	8.000	8.023	-0.032	8.000	8.028	-0.037
10	Max	10.015	10.010	0.014	10.015	10.019	0.005	10.015	10.024	0.000	10.015	10.032	-0.008	10.015	10.037	-0.013
	Min	10.000	10.001	-0.010	10.000	10.010	-0.019	10.000	10.015	-0.024	10.000	10.023	-0.032	10.000	10.028	-0.037
12	Max	12.018	12.012	0.017	12.018	12.023	0.006	12.018	12.029	0.000	12.018	12.039	-0.010	12.018	12.044	-0.015
	Min	12.000	12.001	-0.012	12.000	12.012	-0.023	12.000	12.018	-0.029	12.000	12.028	-0.039	12.000	12.033	-0.044
16	Max	16.018	16.012	0.017	16.018	16.023	0.006	16.018	16.029	0.000	16.018	16.039	-0.010	16.018	16.044	-0.015
	Min	16.000	16.001	-0.012	16.000	16.012	-0.023	16.000	16.018	-0.029	16.000	16.028	-0.039	16.000	16.033	-0.044
20	Max	20.081	20.015	0.019	20.021	20.028	0.006	20.021	20.035	-0.001	20.021	20.048	-0.014	20.021	20.054	-0.020
	Min	20.000	20.002	-0.015	20.000	20.015	-0.028	20.000	20.022	-0.035	20.000	20.035	-0.048	20.000	20.041	-0.054
25	Max	25.021	25.015	0.019	25.021	25.028	0.006	25.021	25.035	-0.001	25.021	25.048	-0.014	25.021	25.061	-0.027
	Min	25.000	25.002	-0.015	25.000	25.015	-0.028	25.000	25.022	-0.035	25.000	25.035	-0.048	25.000	25.048	-0.061
30	Max	30.021	30.015	0.019	30.021	30.028	0.006	30.021	30.035	-0.001	30.021	30.048	-0.014	30.021	30.061	-0.027
	Min	30.000	30.002	-0.015	30.000	30.015	-0.028	30.000	30.022	-0.035	30.000	30.035	-0.048	30.000	30.048	-0.061

^aFrom ANSI B4.2-1978 (R1994).

14 Preferred Metric Hole Basis Transition and Interference Fits^a—
American National Standard (continued)

Dimensions are in millimeters.

Basic Size	Locational Transn.			Locational Transn.			Locational Interf.			Medium Drive			Force		
	Hole H7	Shaft k6	Fit	Hole H7	Shaft n6	Fit	Hole H7	Shaft p6	Fit	Hole H7	Shaft s6	Fit	Hole H7	Shaft u6	Fit
40	Max	40.025	0.018	40.025	40.033	0.08	40.025	40.042	-0.001	40.025	40.059	-0.018	40.025	40.076	-0.035
	Min	40.000	-0.018	40.000	40.017	-0.033	40.000	40.026	-0.042	40.000	40.043	-0.059	40.000	40.060	-0.076
50	Max	50.025	0.023	50.025	50.033	0.008	50.025	50.042	-0.001	50.025	50.059	-0.018	50.025	50.086	-0.045
	Min	50.000	-0.018	50.000	50.017	-0.033	50.000	50.026	-0.042	50.000	50.043	-0.059	50.000	50.070	-0.086
60	Max	60.030	0.028	60.030	60.039	0.010	60.030	60.051	-0.002	60.030	60.072	-0.023	60.030	60.106	-0.057
	Min	60.000	-0.021	60.000	60.020	-0.039	60.000	60.032	-0.051	60.000	60.053	-0.072	60.000	60.087	-0.106
80	Max	80.030	0.028	80.030	80.039	0.010	80.030	80.051	-0.002	80.030	80.078	-0.029	80.030	80.121	-0.072
	Min	80.000	-0.021	80.000	80.020	-0.039	80.000	80.032	-0.051	80.000	80.059	-0.078	80.000	80.102	-0.121
100	Max	100.035	0.032	100.035	100.045	0.012	100.035	100.059	-0.002	100.035	100.093	-0.036	100.035	100.146	-0.089
	Min	100.000	-0.025	100.000	100.023	-0.045	100.000	100.037	-0.059	100.000	100.071	-0.093	100.000	100.124	-0.146
120	Max	120.035	0.032	120.035	120.045	0.012	120.035	120.059	-0.002	120.035	120.101	-0.044	120.035	120.166	-0.109
	Min	120.000	-0.025	120.000	120.023	-0.045	120.000	120.037	-0.059	120.000	120.079	-0.101	120.000	120.144	-0.166
160	Max	160.040	0.037	160.040	160.052	0.013	160.040	160.068	-0.003	160.040	160.125	-0.060	160.040	160.215	-0.150
	Min	160.000	-0.028	160.000	160.027	-0.052	160.000	160.043	-0.068	160.000	160.100	-0.125	160.000	160.190	-0.215
200	Max	200.046	0.042	200.046	200.060	0.015	200.046	200.079	-0.004	200.046	200.151	-0.076	200.046	200.265	-0.190
	Min	200.000	-0.033	200.000	200.031	-0.060	200.000	200.050	-0.079	200.000	200.122	-0.151	200.000	200.236	-0.265
250	Max	250.046	0.042	250.046	250.060	0.015	250.046	250.079	-0.004	250.046	250.169	-0.094	250.046	250.313	-0.238
	Min	250.000	-0.033	250.000	250.031	-0.060	250.000	250.050	-0.079	250.000	250.140	-0.169	250.000	250.284	-0.313
300	Max	300.052	0.048	300.052	300.066	0.018	300.052	300.088	-0.004	300.052	300.202	-0.118	300.052	300.382	-0.298
	Min	300.000	-0.036	300.000	300.034	-0.066	300.000	300.056	-0.088	300.000	300.170	-0.202	300.000	300.350	-0.382
400	Max	400.057	0.053	400.057	400.073	0.020	400.057	400.098	-0.005	400.057	400.244	-0.151	400.057	400.471	-0.378
	Min	400.000	-0.040	400.000	400.037	-0.073	400.000	400.062	-0.098	400.000	400.208	-0.244	400.000	400.435	-0.471
500	Max	500.063	0.058	500.063	500.080	0.023	500.063	500.108	-0.005	500.063	500.292	-0.189	500.063	500.580	-0.477
	Min	500.000	-0.045	500.000	500.040	-0.080	500.000	500.068	-0.108	500.000	500.252	-0.292	500.000	500.540	-0.580

^aFrom ANSI B4.2-1978 (R1994).

15 Preferred Metric Shaft Basis Clearance Fits^a—American National Standard

Dimensions are in millimeters.

Basic Size	Loose Running			Free Running			Close Running			Sliding			Locational Clearance		
	Hole C11	Shaft h11	Fit	Hole D9	Shaft h9	Fit	Hole F8	Shaft h7	Fit	Hole G7	Shaft h6	Fit	Hole H7	Shaft h6	Fit
1	Max	1.120	1.000	1.045	1.000	0.070	1.020	1.000	0.030	1.012	1.000	0.018	1.010	1.000	0.016
	Min	1.060	0.940	1.020	0.975	0.020	1.006	0.990	0.006	1.002	0.994	0.002	1.000	0.994	0.000
1.2	Max	1.320	1.200	1.245	1.200	0.070	1.220	1.200	0.030	1.212	1.200	0.018	1.210	1.200	0.016
	Min	1.260	0.140	1.220	0.175	0.020	1.206	1.190	0.006	1.202	1.194	0.002	1.200	1.194	0.000
1.6	Max	1.720	1.600	1.645	1.600	0.070	1.620	1.600	0.030	1.612	1.600	0.018	1.610	1.600	0.016
	Min	1.660	0.540	1.620	0.575	0.020	1.606	1.590	0.006	1.602	1.594	0.002	1.600	1.594	0.000
2	Max	2.120	2.000	2.045	2.000	0.070	2.020	2.000	0.030	2.012	2.000	0.018	2.010	2.000	0.016
	Min	2.060	1.940	2.020	1.975	0.020	2.006	1.990	0.006	2.002	1.994	0.002	2.000	1.994	0.000
2.5	Max	2.620	2.500	2.545	2.500	0.070	2.520	2.500	0.030	2.512	2.500	0.018	2.510	2.500	0.016
	Min	2.560	2.440	2.520	2.475	0.020	2.506	2.490	0.006	2.502	2.494	0.002	2.500	2.494	0.000
3	Max	3.120	3.000	3.045	3.000	0.070	3.020	3.000	0.030	3.012	3.000	0.018	3.010	3.000	0.016
	Min	3.060	2.940	3.020	2.975	0.020	3.006	2.990	0.006	3.002	2.994	0.002	3.000	2.994	0.000
4	Max	4.145	4.000	4.060	4.000	0.090	4.028	4.000	0.040	4.016	4.000	0.024	4.012	4.000	0.020
	Min	4.070	3.925	4.030	3.970	0.030	4.010	3.988	0.010	4.004	3.992	0.004	4.000	3.992	0.000
5	Max	5.145	5.000	5.060	5.000	0.090	5.028	5.000	0.040	5.016	5.000	0.024	5.012	5.000	0.020
	Min	5.070	4.925	5.030	4.970	0.030	5.010	4.988	0.010	5.004	4.992	0.004	5.000	4.992	0.000
6	Max	6.145	6.000	6.060	6.000	0.090	6.028	6.000	0.040	6.016	6.000	0.024	6.012	6.000	0.020
	Min	6.070	5.925	6.030	5.970	0.030	6.010	5.988	0.010	6.004	5.992	0.004	6.000	5.992	0.000
8	Max	8.170	8.000	8.076	8.000	0.112	8.035	8.000	0.050	8.020	8.000	0.029	8.015	8.000	0.024
	Min	8.080	7.910	8.040	7.964	0.040	8.013	7.985	0.013	8.005	7.991	0.005	8.000	7.991	0.000
10	Max	10.170	10.000	10.076	10.000	0.112	10.035	10.000	0.050	10.020	10.000	0.029	10.015	10.000	0.024
	Min	10.080	9.910	10.040	9.964	0.040	10.013	9.985	0.013	10.005	9.991	0.005	10.000	9.991	0.000
12	Max	12.205	12.000	12.093	12.000	0.136	12.043	12.000	0.061	12.024	12.000	0.035	12.018	12.000	0.029
	Min	12.095	11.890	12.050	11.957	0.050	12.016	11.982	0.016	12.006	11.989	0.006	12.000	11.989	0.000
16	Max	16.205	16.000	16.093	16.000	0.136	16.043	16.000	0.061	16.024	16.000	0.035	16.018	16.000	0.029
	Min	16.095	15.890	16.050	15.957	0.050	16.016	15.982	0.016	16.006	15.989	0.006	16.000	15.989	0.000
20	Max	20.240	20.000	20.117	20.000	0.169	20.053	20.000	0.074	20.028	20.000	0.041	20.021	20.000	0.034
	Min	20.110	19.870	20.065	19.948	0.065	20.020	19.979	0.020	20.007	19.987	0.007	20.000	19.987	0.000
25	Max	25.240	25.000	25.117	25.000	0.169	25.053	25.000	0.074	25.028	25.000	0.041	25.021	25.000	0.034
	Min	25.110	24.870	25.065	24.948	0.065	25.020	24.979	0.020	25.007	24.987	0.007	25.000	24.987	0.000
30	Max	30.240	30.000	30.117	30.000	0.169	30.053	30.000	0.074	30.028	30.000	0.041	30.021	30.000	0.034
	Min	30.110	29.870	30.065	29.948	0.065	30.020	29.979	0.020	30.007	29.987	0.007	30.000	29.987	0.000

^aFrom ANSI B4.2-1978 (R1994).

**15 Preferred Metric Shaft Basis Clearance Fits^a—
American National Standard (continued)**

Dimensions are in millimeters.

Basic Size	Loose Running			Free Running			Close Running			Sliding			Locational Clearance		
	Hole C11	Shaft h11	Fit	Hole D9	Shaft h9	Fit	Hole F8	Shaft h7	Fit	Hole G7	Shaft h6	Fit	Hole H7	Shaft h6	Fit
40	Max	40.000	0.440	40.142	40.000	0.204	40.064	40.000	0.089	40.034	40.000	0.050	40.025	40.000	0.041
	Min	40.120	39.840	40.080	39.938	0.080	40.025	39.975	0.025	40.009	39.984	0.009	40.000	39.984	0.000
50	Max	50.290	50.000	50.142	50.000	0.204	50.064	50.000	0.089	50.034	50.000	0.050	50.025	50.000	0.041
	Min	50.130	49.840	50.080	49.938	0.080	50.025	49.975	0.025	50.009	49.984	0.009	50.000	49.984	0.000
60	Max	60.330	60.000	60.174	60.000	0.248	60.076	60.000	0.106	60.040	60.000	0.059	60.030	60.000	0.049
	Min	60.140	59.810	60.100	59.926	0.100	60.030	59.970	0.030	60.010	59.981	0.010	60.000	59.981	0.000
80	Max	80.340	80.000	80.174	80.000	0.248	80.076	80.000	0.106	80.040	80.000	0.059	80.030	80.000	0.049
	Min	80.150	79.810	80.100	79.926	0.100	80.030	79.970	0.030	80.010	79.981	0.010	80.000	79.981	0.000
100	Max	100.390	100.000	100.207	100.000	0.294	100.090	100.000	0.125	100.047	100.000	0.069	100.035	100.000	0.057
	Min	100.170	99.780	100.120	99.913	0.120	100.036	99.965	0.036	100.012	99.978	0.012	100.000	99.978	0.000
120	Max	120.400	120.000	120.207	120.000	0.294	120.090	120.000	0.125	120.047	120.000	0.069	120.035	120.000	0.057
	Min	120.180	119.780	120.120	119.913	0.120	120.036	119.965	0.036	120.012	119.978	0.012	120.000	119.978	0.000
160	Max	160.460	160.000	160.245	160.000	0.345	160.106	160.000	0.146	160.054	160.000	0.079	160.040	160.000	0.065
	Min	160.210	159.750	160.145	159.900	0.145	160.043	159.960	0.043	160.014	159.975	0.014	160.000	159.975	0.000
200	Max	200.530	200.000	200.285	200.000	0.400	200.122	200.000	0.168	200.061	200.000	0.090	200.046	200.000	0.075
	Min	200.240	199.710	200.170	199.885	0.170	200.050	199.954	0.050	200.015	199.971	0.015	200.000	199.971	0.000
250	Max	250.570	250.000	250.285	250.000	0.400	250.122	250.000	0.168	250.061	250.000	0.090	250.046	250.000	0.075
	Min	250.280	249.710	250.170	249.885	0.170	250.050	249.954	0.050	250.015	249.971	0.015	250.000	249.971	0.000
300	Max	300.650	300.000	300.320	300.000	0.450	300.137	300.000	0.189	300.069	300.000	0.101	300.052	300.000	0.084
	Min	300.330	299.680	300.190	299.870	0.190	300.056	299.948	0.056	300.017	299.968	0.017	300.000	299.968	0.000
400	Max	400.760	400.000	400.350	400.000	0.490	400.151	400.000	0.208	400.075	400.000	0.111	400.057	400.000	0.093
	Min	400.400	399.640	400.210	399.860	0.210	400.062	399.943	0.062	400.018	399.964	0.018	400.000	399.964	0.000
500	Max	500.880	500.000	500.385	500.000	0.540	500.165	500.000	0.228	500.083	500.000	0.123	500.063	500.000	0.103
	Min	500.480	499.600	500.230	499.845	0.230	500.068	499.937	0.068	500.020	499.960	0.020	500.000	499.960	0.000

^aFrom ANSI B4.2-1978 (R1994).

**16 Preferred Metric Shaft Basis Transition and Interference Fits^a—
American National Standard**

Basic Size	Locational Transn.			Locational Transn.			Locational Interf.			Medium Drive			Force		
	Hole K7	Shaft h6	Fit	Hole N7	Shaft h6	Fit	Hole P7	Shaft h6	Fit	Hole S7	Shaft h6	Fit	Hole U7	Shaft h6	Fit
1	Max	1.000	0.006	0.996	1.000	0.002	0.994	1.000	0.000	0.986	1.000	-0.008	0.982	1.000	-0.012
	Min	0.990	-0.010	0.986	0.994	-0.014	0.984	0.994	-0.016	0.976	0.994	-0.024	0.972	0.994	-0.028
1.2	Max	1.200	0.006	1.196	1.200	0.002	1.194	1.200	0.000	1.186	1.200	-0.008	1.182	1.200	-0.012
	Min	1.190	-0.010	1.186	1.194	-0.014	1.184	1.194	-0.016	1.176	1.194	-0.024	1.172	1.194	-0.028
1.6	Max	1.600	0.006	1.596	1.600	0.002	1.594	1.600	0.000	1.586	1.600	-0.008	1.582	1.600	-0.012
	Min	1.590	-0.010	1.586	1.594	-0.014	1.584	1.594	-0.016	1.576	1.594	-0.024	1.572	1.594	-0.028
2	Max	2.000	0.006	1.996	2.000	0.002	1.994	2.000	0.000	1.986	2.000	-0.008	1.982	2.000	-0.012
	Min	1.990	-0.010	1.986	1.994	-0.014	1.984	1.994	-0.016	1.976	1.994	-0.024	1.972	1.994	-0.028
2.5	Max	2.500	0.006	2.496	2.500	0.002	2.494	2.500	0.000	2.486	2.500	-0.008	2.482	2.500	-0.012
	Min	2.490	-0.010	2.486	2.494	-0.014	2.484	2.494	-0.016	2.476	2.494	-0.024	2.472	2.494	-0.028
3	Max	3.000	0.006	2.996	3.000	0.002	2.994	3.000	0.000	2.986	3.000	-0.008	2.982	3.000	-0.012
	Min	2.990	-0.010	2.986	2.994	-0.014	2.984	2.994	-0.016	2.976	2.994	-0.024	2.972	2.994	-0.028
4	Max	4.003	0.011	3.996	4.000	0.004	3.992	4.000	0.000	3.985	4.000	-0.007	3.981	4.000	-0.011
	Min	3.991	-0.009	3.984	3.992	-0.016	3.980	3.992	-0.020	3.973	3.992	-0.027	3.969	3.992	-0.031
5	Max	5.003	0.011	4.996	5.000	0.004	4.992	5.000	0.000	4.985	5.000	-0.007	4.981	5.000	-0.011
	Min	4.991	-0.009	4.984	4.992	-0.016	4.980	4.992	-0.020	4.973	4.992	-0.027	4.969	4.992	-0.031
6	Max	6.003	0.011	5.996	6.000	0.004	5.992	6.000	0.000	5.985	6.000	-0.007	5.981	6.000	-0.011
	Min	5.991	-0.009	5.984	5.992	-0.016	5.980	5.992	-0.020	5.973	5.992	-0.027	5.969	5.992	-0.031
8	Max	8.005	0.014	7.996	8.000	0.005	7.991	8.000	0.000	7.983	8.000	-0.008	7.978	8.000	-0.013
	Min	7.990	-0.010	7.981	7.991	-0.019	7.976	7.991	-0.024	7.968	7.991	-0.032	7.963	7.991	-0.037
10	Max	10.005	0.014	9.996	10.000	0.005	9.991	10.000	0.000	9.983	10.000	-0.008	9.978	10.000	-0.013
	Min	9.990	-0.010	9.981	9.991	-0.019	9.976	9.991	-0.024	9.968	9.991	-0.032	9.963	9.991	-0.037
12	Max	12.006	0.017	11.995	12.000	0.006	11.989	12.000	0.000	11.979	12.000	-0.010	11.974	12.000	-0.015
	Min	11.988	-0.012	11.977	11.989	-0.023	11.971	11.989	-0.029	11.961	11.989	-0.039	11.956	11.989	-0.044
16	Max	16.006	0.017	15.995	16.000	0.006	15.989	16.000	0.000	15.979	16.000	-0.010	15.974	16.000	-0.015
	Min	15.988	-0.012	15.977	15.989	-0.023	15.971	15.989	-0.029	15.961	15.989	-0.039	15.956	15.989	-0.044
20	Max	20.006	0.019	19.993	20.000	0.006	19.986	20.000	0.001	19.973	20.000	-0.014	19.967	20.000	-0.020
	Min	19.985	-0.015	19.972	19.987	-0.028	19.965	19.987	-0.035	19.952	19.987	-0.048	19.946	19.987	-0.054
25	Max	25.006	0.019	24.993	25.000	0.006	24.986	25.000	0.001	24.973	25.000	-0.014	24.967	25.000	-0.020
	Min	24.985	-0.015	24.972	24.987	-0.028	24.965	24.987	-0.035	24.952	24.987	-0.048	24.939	24.987	-0.061
30	Max	30.006	0.019	29.993	30.000	0.006	29.986	30.000	0.001	29.973	30.000	-0.014	29.967	30.000	-0.020
	Min	29.985	-0.015	29.972	29.987	-0.028	29.965	29.987	-0.035	29.952	29.987	-0.048	29.939	29.987	-0.061

^aFrom ANSI B4.2-1978 (R1994).

Dimensions are in millimeters.

**16 Preferred Metric Basis Transition and Interference Fits^a—
American National Standard (continued)**

Dimensions are in millimeters.

Basic Size	Locational Transn.			Locational Interf.			Medium Drive			Force						
	Hole K7	Shaft h6	Fit	Hole N7	Shaft h6	Fit	Hole P7	Shaft h6	Fit	Hole S7	Shaft h6	Fit	Hole U7	Shaft h6	Fit	
40	Max	40.007	40.000	0.023	39.992	40.000	0.008	39.983	40.000	-0.001	39.966	40.000	-0.018	39.949	40.000	-0.035
	Min	39.982	39.984	-0.018	39.967	39.984	-0.033	39.958	39.984	-0.042	39.941	39.984	-0.059	39.924	39.984	-0.076
50	Max	50.007	50.000	0.023	49.992	50.000	0.008	49.983	50.000	-0.001	49.966	50.000	-0.018	49.939	50.000	-0.045
	Min	49.982	49.984	-0.018	49.967	49.984	-0.033	49.958	49.984	-0.042	49.941	49.984	-0.059	49.914	49.984	-0.086
60	Max	60.009	60.000	0.028	59.991	60.000	0.010	59.979	60.000	-0.002	59.958	60.000	-0.023	59.924	60.000	-0.057
	Min	59.979	59.981	-0.021	59.961	59.981	-0.039	59.949	59.981	-0.051	59.928	59.981	-0.072	59.894	59.981	-0.106
80	Max	80.009	80.000	0.028	79.991	80.000	0.010	79.979	80.000	-0.002	79.952	80.000	-0.029	79.909	80.000	-0.072
	Min	79.979	79.981	-0.021	79.961	79.981	-0.039	79.949	79.981	-0.051	79.922	79.981	-0.078	79.879	79.981	-0.121
100	Max	100.010	100.000	0.032	99.990	100.000	0.012	99.976	100.000	-0.002	99.942	100.000	-0.036	99.889	100.000	-0.089
	Min	99.975	99.978	-0.025	99.955	99.978	-0.045	99.941	99.978	-0.059	99.907	99.978	-0.093	99.854	99.978	-0.146
120	Max	120.010	120.000	0.032	119.990	120.000	0.012	119.976	120.000	-0.002	119.934	120.000	-0.044	119.869	120.000	-0.109
	Min	119.975	119.978	-0.025	119.955	119.978	-0.045	119.941	119.978	-0.059	119.899	119.978	-0.101	119.834	119.978	-0.166
160	Max	160.012	160.000	0.037	159.988	160.000	0.013	159.972	160.000	-0.003	159.915	160.000	-0.060	159.825	160.000	-0.150
	Min	159.972	159.975	-0.028	159.948	159.975	-0.052	159.932	159.975	-0.068	159.875	159.975	-0.125	159.785	159.975	-0.215
200	Max	200.013	200.000	0.042	199.986	200.000	0.015	199.967	200.000	-0.004	199.895	200.000	-0.076	199.781	200.000	-0.190
	Min	199.967	199.971	-0.033	199.940	199.971	-0.060	199.921	199.971	-0.079	199.849	199.971	-0.151	199.735	199.971	-0.265
250	Max	250.013	250.000	0.042	249.986	250.000	0.015	249.967	250.000	-0.004	249.877	250.000	-0.094	249.733	250.000	-0.238
	Min	249.967	249.971	-0.033	249.940	249.971	-0.060	249.921	249.971	-0.079	249.831	249.971	-0.169	249.687	249.971	-0.313
300	Max	300.016	300.000	0.048	299.986	300.000	0.018	299.964	300.000	-0.004	299.850	300.000	-0.118	299.670	300.000	-0.298
	Min	299.964	299.968	-0.036	299.934	299.968	-0.066	299.912	299.968	-0.088	299.798	299.968	-0.202	299.618	299.968	-0.382
400	Max	400.017	400.000	0.053	399.984	400.000	0.020	399.959	400.000	-0.005	399.813	400.000	-0.151	399.586	400.000	-0.378
	Min	399.960	399.964	-0.040	399.927	399.964	-0.073	399.902	399.964	-0.098	399.756	399.964	-0.244	399.529	399.964	-0.471
500	Max	500.018	500.000	0.058	499.983	500.000	0.023	499.955	500.000	-0.005	499.771	500.000	-0.189	499.483	500.000	-0.477
	Min	499.955	499.960	-0.045	499.920	499.960	-0.080	499.892	499.960	-0.108	499.708	499.960	-0.292	499.420	499.960	-0.580

^aFrom ANSI B4.2-1978 (R1994).