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PRESSURE CONVERSION INCHES OF MERCURY TO MILLIBARS

Inches of Mercury	Millibars	Inches of Mercury	Millibars
29.92	1013.25	30.00	1015.9
29.90	1012.7	30.05	1017.3
29.80	1010.9	30.10	1018.7
29.70	1009.1	30.15	1020.1
29.60	1007.3	30.20	1021.5
29.50	1005.5	30.25	1022.9
29.40	1003.7	30.30	1024.3
29.30	1001.9	30.35	1025.7
29.20	1000.1	30.40	1027.1
29.10	998.3	30.45	1028.5
29.00	996.5	30.50	1029.9
28.90	994.7	30.55	1031.3
28.80	992.9	30.60	1032.7
28.70	991.1	30.65	1034.1
28.60	989.3	30.70	1035.5
28.50	987.5	30.75	1036.9
28.40	985.7	30.80	1038.3
28.30	983.9	30.85	1039.7
28.20	982.1	30.90	1041.1
28.10	980.3	30.95	1042.5
28.00	978.5	31.00	1043.9
27.90	976.7	31.05	1045.3
27.80	974.9	31.10	1046.7
27.70	973.1	31.15	1048.1
27.60	971.3	31.20	1049.5
27.50	969.5	31.25	1050.9
27.40	967.7	31.30	1052.3
27.30	965.9	31.35	1053.7
27.20	964.1	31.40	1055.1
27.10	962.3	31.45	1056.5
27.00	960.5	31.50	1057.9

**TEMPERATURE CONVERSION
CELSIUS TO FAHRENHEIT**

DEG. C	DEG. F	DEG. C	DEG. F	DEG. C	DEG. F	DEG. C	DEG. F	DEG. C	DEG. F	DEG. C	DEG. F
-100	-148	-74	-101	-48	-54	-22	-8	4	39	30	86
-99	-146	-73	-99	-47	-53	-21	-6	5	41	31	88
-98	-144	-72	-98	-46	-51	-20	-4	6	43	32	90
-97	-143	-71	-96	-45	-49	-19	-2	7	45	33	91
-96	-141	-70	-94	-44	-47	-18	0	8	46	34	93
-95	-139	-69	-92	-43	-45	-17	1	9	48	35	95
-94	-137	-68	-90	-42	-44	-16	3	10	50	36	97
-93	-135	-67	-89	-41	-42	-15	5	11	52	37	99
-92	-134	-66	-87	-40	-40	-14	7	12	54	38	100
-91	-132	-65	-85	-39	-38	-13	9	13	55	39	102
-90	-130	-64	-83	-38	-36	-12	10	14	57	40	104
-89	-128	-63	-81	-37	-35	-11	12	15	59	41	106
-88	-126	-62	-80	-36	-33	-10	14	16	61	42	108
-87	-125	-61	-78	-35	-31	-9	16	17	63	43	109
-86	-123	-60	-76	-34	-29	-8	18	18	64	44	111
-85	-121	-59	-74	-33	-27	-7	19	19	66	45	113
-84	-119	-58	-72	-32	-26	-6	21	20	68	46	115
-83	-117	-57	-71	-31	-24	-5	23	21	70	47	117
-82	-116	-56	-69	-30	-22	-4	25	22	72	48	118
-81	-114	-55	-67	-29	-20	-3	27	23	73	49	120
-80	-112	-54	-65	-28	-18	-2	28	24	75	50	122
-79	-110	-53	-63	-27	-17	-1	30	25	77	51	124
-78	-108	-52	-62	-26	-15	0	32	26	79	52	126
-77	-107	-51	-60	-25	-13	1	34	27	81	53	127
-76	-105	-50	-58	-24	-11	2	36	28	82	54	129
-75	-103	-49	-56	-23	-9	3	37	29	84	55	131

**PRESSURE CONVERSION
INCHES OF MERCURY TO MILLIBARS**

INCHES OF MERCURY MILLIBARS	28.0 948	28.1 951	28.2 955	28.3 958	28.4 962	28.5 965	28.6 968	28.7 972	28.8 975	28.9 979	29.0 982
INCHES OF MERCURY MILLIBARS	29.1 985	29.2 989	29.3 992	29.4 995	29.5 999	29.6 1002	29.7 1006	29.8 1009	29.9 1012	30.0 1016	
INCHES OF MERCURY MILLIBARS	30.1 1019	30.2 1023	30.3 1026	30.4 1029	30.5 1033	30.6 1036	30.7 1040	30.8 1043	30.9 1046	31.0 1050	

Figure 4-2 (Sheet 1 of 3)

**FUEL QUANTITY CONVERSION
U.S. GALLONS TO LITERS**

U.S. GALLONS	LITERS	U.S. GALLONS	LITERS
10	37.9	260	984.1
20	75.7	270	1022.0
30	113.6	280	1059.8
40	151.4	290	1097.7
50	189.3	300	1135.5
60	227.1	310	1173.4
70	265.0	320	1211.2
80	302.8	330	1249.1
90	340.7	340	1286.9
100	378.5	350	1324.8
110	416.4	360	1362.6
120	454.2	370	1400.5
130	492.1	380	1438.3
140	529.9	390	1476.2
150	567.8	400	1514.0
160	605.6	410	1551.9
170	643.5	420	1589.7
180	681.3	430	1627.6
190	719.2	440	1665.4
200	757.0	450	1703.3
210	794.9	460	1741.1
220	832.7	470	1779.0
230	870.6	480	1816.8
240	908.4	490	1854.7
250	946.3	500	1892.5

**WEIGHT CONVERSION
POUNDS TO KILOGRAMS**

POUNDS	KILOGRAMS	POUNDS	KILOGRAMS	POUNDS	KILOGRAMS
12500	5670	10800	4899	7000	3175
12400	5625	10600	4808	6800	3084
12200	5534	10400	4717	6600	2994
12000	5443	10200	4627	6400	2903
11800	5352	10000	4536	6200	2812
11600	5262	9800	4445	6000	2721
11400	5171	9600	4354	5800	2630
11200	5080	9400	4263	5600	2540
11000	4990	9200	4173	5400	2449
		9000	4082	5200	2358
		8800	3991	5000	2268
		8600	3900	4800	2177
		8400	3810	4600	2086
		8200	3719	4400	1995
		8000	3628	4200	1905
		7800	3538	4000	1814
		7600	3447	3800	1723
		7400	3356	3600	1633
		7200	3265	3400	1542



Figure 4-2 (Sheet 2)

**HORIZONTAL LENGTH CONVERSION
FEET TO METERS**

FEET	METERS	FEET	METERS
15000	4572	7400	2256
14800	4511	7200	2195
14600	4450	7000	2134
14400	4389	6800	2073
14200	4328	6600	2012
14000	4267	6400	1951
13800	4206	6200	1890
13600	4145	6000	1829
13400	4084	5800	1768
13200	4023	5600	1707
13000	3962	5400	1646
12800	3901	5200	1585
12600	3840	5000	1524
12400	3780	4800	1463
12200	3719	4600	1402
12000	3658	4400	1341
11800	3597	4200	1280
11600	3536	4000	1219
11400	3475	3800	1158
11200	3414	3600	1097
11000	3353	3400	1036
10800	3292	3200	975
10600	3231	3000	914
10400	3170	2800	853
10200	3109	2600	792
10000	3048	2400	732
9800	2987	2200	671
9600	2926	2000	610
9400	2865	1800	549
9200	2804	1600	488
9000	2743	1400	427
8800	2682	1200	366
8600	2621	1000	305
8400	2560	800	244
8200	2499	600	183
8000	2438	400	122
7800	2377	200	61
7600	2316	0	0

Figure 4-2 (Sheet 3)

RAM AIR TEMPERATURE RISE - DEGREES CELSIUS

EXAMPLE:

OAT = RAT - RAM RISE

A. RAM AIR TEMPERATURE = -30°C

B. AIRSPEED = 200 KIAS

C. PRESSURE ALTITUDE = 25,000 FEET

D. RAM AIR TEMPERATURE RISE = 11°C

OUTSIDE AIR TEMPERATURE = (-30) - (11) = -41°C

ALT FT	AIRSPEED - KIAS																		
	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	275
0	1	2	2	2	3	3	3	4	4	5	5	6	6	7	8	8	9	10	10
1000	1	2	2	2	3	3	3	4	4	5	5	6	7	7	8	8	9	10	10
2000	1	2	2	2	3	3	4	4	5	5	6	6	7	7	8	9	9	10	10
3000	1	2	2	2	3	3	4	4	5	5	6	6	7	8	8	9	10	10	11
4000	1	2	2	3	3	3	4	4	5	5	6	7	7	8	8	9	10	11	11
5000	2	2	2	3	3	3	4	4	5	6	6	7	7	8	9	9	10	11	11
6000	2	2	2	3	3	4	4	5	5	6	6	7	8	8	9	10	10	11	12
7000	2	2	2	3	3	4	4	5	5	6	6	7	8	8	9	10	11	12	12
8000	2	2	2	3	3	4	4	5	5	6	7	7	8	8	9	10	11	12	12
9000	2	2	2	3	3	4	4	5	6	6	7	8	8	9	10	11	11	12	13
10000	2	2	3	3	3	4	5	5	6	6	7	8	9	9	10	11	12	13	13
11000	2	2	3	3	4	4	5	5	6	7	7	8	9	10	10	11	12	13	13
12000	2	2	3	3	4	4	5	5	6	7	7	8	9	10	11	12	12	13	14
13000	2	2	3	3	4	4	5	6	6	7	8	8	9	10	11	12	13	14	14
14000	2	2	3	3	4	5	5	6	6	7	8	9	10	10	11	12	13	14	15
15000	2	3	3	4	4	5	5	6	7	7	8	9	10	11	12	13	14	15	15
16000	2	3	3	4	4	5	5	6	7	8	8	9	10	11	12	13	14	15	16
17000	2	3	3	4	4	5	6	6	7	8	9	10	10	11	12	13	14	15	16
18000	2	3	3	4	4	5	6	7	7	8	9	10	11	12	13	14	15	16	16
19000	2	3	3	4	5	5	6	7	8	8	9	10	11	12	13	14	15	16	17
20000	2	3	4	4	5	5	6	7	8	9	10	11	11	13	14	15	16	17	17
21000	3	3	4	4	5	6	6	7	8	9	10	11	12	13	14	15	16	17	18
22000	3	3	4	4	5	6	7	7	8	9	10	11	12	13	14	16	17	18	19
23000	3	3	4	5	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
24000	3	3	4	5	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20
25000	3	4	4	5	6	6	7	8	9	10	11	12	13	15	16	17	18	20	20
26000	3	4	4	5	6	7	8	9	9	11	12	13	14	15	16	18	19	20	21
27000	3	4	4	5	6	7	8	9	10	11	12	13	14	16	17	18	19	21	21
28000	3	4	5	5	6	7	8	9	10	11	12	14	15	16	17	19	20	21	22
29000	3	4	5	6	6	7	8	9	10	12	13	14	15	17	18	19	21	22	23
30000	3	4	5	6	7	8	9	10	11	12	13	14	16	17	18	20	21	23	23
31000	4	4	5	6	7	8	9	10	11	12	14	15	16	18	19	20	22		
32000	4	5	5	6	7	8	9	10	12	13	14	15	17	18	20	21	23		
33000	4	5	6	6	7	9	10	11	12	13	15	16	17	19	20	22	23		
34000	4	5	6	7	8	9	10	11	12	14	15	16	18	19	21	22			
35000	4	5	6	7	8	9	10	12	13	14	16	17	18	20	22				
36000	4	5	6	7	8	9	11	12	13	15	16	18	19	21	22				
37000	5	5	6	8	9	10	11	12	14	15	17	18	20	21					
38000	5	6	7	8	9	10	12	13	14	16	17	19	21	22					
39000	5	6	7	8	9	11	12	14	15	17	18	20	22						
40000	5	6	7	9	10	11	13	14	16	17	19	21	22						
41000	5	7	8	9	10	12	13	15	16	18	20	22							
42000	6	7	8	9	11	12	14	15	17	19	21	22							
43000	6	7	8	10	11	13	14	16	18	20	21								
44000	6	8	9	10	12	13	15	17	19	20	22								
45000	7	8	9	11	12	14	16	18	19	21									

Figure 4-3

AIRSPEED AND MACHMETER CALIBRATION

GEAR UP AIR SPEED CALIBRATION

EXAMPLE:

- A. Airspeed = 190 KIAS
- B. Indicated Altitude = 35000 FEET
- C. Calibrated Airspeed = 189 KCAS

KIAS	Indicated Altitude						
	0	10000	20000	30000	35000	40000	45000
80	81	81	81	81	81	81	81
90	91	91	91	91	91	91	91
100	101	101	101	101	101	101	101
110	111	111	111	111	111	111	111
120	121	121	121	121	121	121	121
130	130	130	130	130	130	130	130
140	140	140	140	140	140	140	140
150	150	150	150	150	150	150	150
160	160	160	160	160	160	160	159
170	170	170	170	170	170	169	169
180	180	180	180	180	179	179	179
190	190	190	190	190	189	189	188
200	200	200	200	199	199	198	198
210	210	210	210	209	209	208	207
220	220	220	219	219	218	217	217
230	230	230	229	228	228	227	
240	240	240	239	238	237	236	
250	250	250	249	248	247	246	
260	260	260	258	257	256		
270	269	269	268	267	266		
275	274	274	273	272	271		
280	279	279	278	276	275		

GEAR DOWN AIR SPEED CALIBRATION

EXAMPLE:

- A. Airspeed = 240 KIAS
- B. Indicated Altitude = 20000 FEET
- C. Calibrated Airspeed = 235 KCAS

KIAS	Indicated Altitude						
	0	10000	20000	30000	35000	40000	45000
80	81	81	81	81	81	81	80
90	91	91	91	91	90	90	90
100	101	101	101	100	100	100	100
110	111	111	110	110	110	110	109
120	120	120	120	120	120	119	119
130	130	130	130	130	129	129	128
140	140	140	140	139	139	138	138
150	150	150	149	149	148	148	147
160	160	160	159	158	158	157	156
170	170	169	169	168	167	166	165
180	180	179	178	177	176	175	174
190	189	189	188	187	186	184	183
200	199	198	198	196	195	193	191
210	209	208	207	205	204	202	200
220	219	218	217	214	213	211	208
230	228	227	226	223	222	219	
240	238	237	235	232	230	228	
250	248	246	245	241	239	236	
260	257	256	254	250	248		
270	267	265	263	259	256		
280	276	275	272	268	265		

Note: Shaded areas are above V_{MO}/M_{MO} and are for interpolation only.



Figure 4-4 (Sheet 1 of 2)

AIRSPEED AND MACHMETER CALIBRATION

**GROUND AIRSPEED
CALIBRATION
(PILOT/COPILOT PFD)**

FLAPS 0° AND 15°	
GEAR DOWN	
KIAS	KCAS
70	71
80	81
90	91
100	101
110	111
120	121
130	131

**MACHMETER CALIBRATION
(PILOT/COPILOT AND STANDBY SYSTEMS,
ALL ALTITUDES, ANY FLAP POSITION)**

GEAR UP	
Ind. Mach	True Mach
0.200	0.200
0.250	0.251
0.300	0.300
0.350	0.350
0.400	0.399
0.450	0.448
0.500	0.497
0.510	0.507
0.520	0.517
0.530	0.526
0.540	0.536
0.550	0.546
0.560	0.555
0.570	0.565
0.580	0.574
0.590	0.584
0.600	0.593
0.610	0.603
0.620	0.613
0.630	0.622
0.640	0.632
0.650	0.641
0.660	0.650
0.670	0.660
0.680	0.669
0.690	0.679
0.700	0.688
0.710	0.697
0.720	0.707
0.730	0.716
0.740	0.725

GEAR DOWN	
Ind. Mach	True Mach
0.100	0.102
0.200	0.201
0.250	0.251
0.300	0.300
0.350	0.348
0.400	0.396
0.450	0.443
0.500	0.490
0.550	0.535
0.600	0.580
0.610	0.588
0.620	0.597
0.630	0.606
0.640	0.614
0.650	0.623
0.660	0.631
0.670	0.640
0.680	0.648
0.690	0.656
0.700	0.665
0.710	0.673
0.720	0.681

Note: Shaded areas are above V_{MO}/M_{MO} and are for interpolation only.



Figure 4-4 (Sheet 2)

**ALTIMETER POSITION CORRECTION - FEET
PILOT'S AND COPILOT'S SYSTEMS (GEAR UP)**

INDICATED ALTITUDE = CALIBRATED ALTITUDE

**ALTIMETER POSITION CORRECTION - FEET
PILOT'S AND COPILOT'S SYSTEMS (GEAR DOWN)**

EXAMPLE:

- A. Airspeed = 200 KIAS
- B. Indicated Pressure Altitude = 20,000 FEET
- C. Altimeter Position Correction = -80 FEET
- D. Actual Pressure Altitude = 19,920 FEET

ALT FEET	AIRSPEED - KIAS																		
	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	275
0	0	0	0	0	0	0	-10	-10	-10	-10	-20	-20	-30	-30	-40	-50	-60	-70	-70
1000	0	0	0	0	0	0	-10	-10	-10	-20	-20	-30	-30	-40	-40	-50	-60	-70	-80
2000	0	0	0	0	0	-10	-10	-10	-10	-20	-20	-30	-30	-40	-50	-60	-70	-80	-80
3000	0	0	0	0	0	-10	-10	-10	-10	-20	-20	-30	-40	-40	-50	-60	-70	-80	-90
4000	0	0	0	0	0	-10	-10	-10	-20	-20	-30	-30	-40	-50	-50	-60	-80	-90	-90
5000	0	0	0	0	0	-10	-10	-10	-20	-20	-30	-30	-40	-50	-60	-70	-80	-90	-100
6000	0	0	0	0	-10	-10	-10	-10	-20	-20	-30	-40	-40	-50	-60	-70	-90	-100	-110
7000	0	0	0	0	-10	-10	-10	-20	-20	-30	-30	-40	-50	-60	-70	-80	-90	-110	-110
8000	0	0	0	0	-10	-10	-10	-20	-20	-30	-30	-40	-50	-60	-70	-80	-100	-110	-120
9000	0	0	0	0	-10	-10	-10	-20	-20	-30	-40	-40	-50	-60	-80	-90	-100	-120	-130
10000	0	0	0	0	-10	-10	-10	-20	-20	-30	-40	-50	-60	-70	-80	-100	-110	-130	-140
11000	0	0	0	-10	-10	-10	-20	-20	-30	-30	-40	-50	-60	-70	-90	-100	-120	-140	-150
12000	0	0	0	-10	-10	-10	-20	-20	-30	-40	-40	-50	-70	-80	-90	-110	-130	-150	-160
13000	0	0	0	-10	-10	-10	-20	-20	-30	-40	-50	-60	-70	-80	-100	-120	-140	-160	-170
14000	0	0	0	-10	-10	-20	-20	-30	-30	-40	-50	-60	-80	-90	-110	-130	-150	-170	-180
15000	0	0	-10	-10	-10	-20	-20	-30	-40	-50	-60	-70	-80	-100	-110	-130	-160	-180	-200
16000	0	0	-10	-10	-10	-20	-20	-30	-40	-50	-60	-70	-90	-100	-120	-140	-170	-190	-210
17000	0	0	-10	-10	-10	-20	-30	-30	-40	-50	-60	-80	-90	-110	-130	-150	-180	-210	-220
18000	0	0	-10	-10	-20	-20	-30	-40	-50	-60	-70	-80	-100	-120	-140	-170	-190	-220	-240
19000	0	0	-10	-10	-20	-20	-30	-40	-50	-60	-70	-90	-110	-130	-150	-180	-210	-240	-260
20000	0	-10	-10	-10	-20	-20	-30	-40	-50	-70	-80	-100	-120	-140	-160	-190	-220	-260	-270
21000	0	-10	-10	-10	-20	-30	-40	-50	-60	-70	-90	-100	-120	-150	-170	-200	-240	-270	-290
22000	0	-10	-10	-20	-20	-30	-40	-50	-60	-80	-90	-110	-130	-160	-190	-220	-250	-290	-320
23000	0	-10	-10	-20	-20	-30	-40	-50	-70	-80	-100	-120	-140	-170	-200	-240	-270	-320	-340
24000	-10	-10	-10	-20	-30	-30	-40	-60	-70	-90	-110	-130	-150	-180	-220	-250	-290	-340	-360
25000	-10	-10	-10	-20	-30	-40	-50	-60	-80	-90	-120	-140	-170	-200	-230	-270	-320	-360	-390
26000	-10	-10	-20	-20	-30	-40	-50	-70	-80	-100	-120	-150	-180	-210	-250	-290	-340	-390	-420
27000	-10	-10	-20	-20	-30	-40	-60	-70	-90	-110	-130	-160	-190	-230	-270	-310	-360	-420	-450
28000	-10	-10	-20	-30	-40	-50	-60	-80	-100	-120	-140	-170	-210	-250	-290	-340	-390	-450	-490
29000	-10	-10	-20	-30	-40	-50	-70	-80	-100	-130	-160	-190	-220	-260	-310	-360	-420	-490	-520
30000	-10	-20	-20	-30	-40	-60	-70	-90	-110	-140	-170	-200	-240	-290	-340	-390	-450	-520	-560
31000	-10	-20	-20	-30	-50	-60	-80	-100	-120	-150	-180	-220	-260	-310	-360	-420	-490	-570	-610
32000	-10	-20	-30	-40	-50	-60	-80	-110	-130	-160	-200	-240	-280	-330	-390	-460	-530	-610	
33000	-10	-20	-30	-40	-50	-70	-90	-110	-140	-170	-210	-250	-300	-360	-420	-490	-570	-660	
34000	-10	-20	-30	-40	-60	-80	-100	-120	-150	-190	-230	-270	-330	-390	-450	-530	-620		
35000	-20	-20	-30	-50	-60	-80	-110	-130	-170	-200	-250	-300	-350	-420	-490	-570			
36000	-20	-30	-40	-50	-70	-90	-110	-140	-180	-220	-270	-320	-380	-450	-530	-620			
37000	-20	-30	-40	-60	-80	-100	-130	-160	-200	-240	-290	-350	-420	-490	-580				
38000	-20	-30	-50	-60	-80	-110	-140	-170	-210	-260	-320	-380	-450	-540	-630				
39000	-20	-30	-50	-70	-90	-120	-150	-190	-230	-290	-350	-420	-500	-580					
40000	-30	-40	-50	-70	-100	-130	-160	-210	-260	-310	-380	-450	-540	-640					
41000	-30	-40	-60	-80	-110	-140	-180	-230	-280	-340	-410	-500	-590						
42000	-30	-50	-70	-90	-120	-150	-200	-250	-300	-370	-450	-540	-640						
43000	-40	-50	-70	-100	-130	-170	-210	-270	-330	-410	-490	-590							
44000	-40	-60	-80	-110	-140	-180	-230	-290	-360	-440	-540	-640							
45000	-40	-60	-90	-120	-160	-200	-260	-320	-400	-480	-590								

Note: Shaded areas are above V_{MO}/M_{MO} and are for interpolation only.

Figure 4-5

STANDBY ALTIMETER POSITION CORRECTION

EXAMPLE:

- A. Airspeed = 200KIAS
- B. Indicated Pressure Altitude = 20,000 FEET
- C. Altimeter Position Correction = -70 FEET
- D. Actual Pressure Altitude = 19,930 FEET

GEAR UP

ALT FEET	AIRSPEED - KIAS																		
	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	275
0	-10	-10	-10	-20	-20	-20	-20	-20	-30	-30	-30	-40	-40	-50	-50	-60	-60	-70	-70
1000	-10	-10	-10	-20	-20	-20	-20	-30	-30	-30	-40	-40	-50	-50	-50	-60	-60	-70	-70
2000	-10	-10	-10	-20	-20	-20	-20	-30	-30	-30	-40	-40	-50	-50	-50	-60	-70	-70	-80
3000	-10	-10	-10	-20	-20	-20	-20	-30	-30	-30	-40	-40	-50	-50	-60	-60	-70	-80	-80
4000	-10	-10	-10	-20	-20	-20	-20	-30	-30	-30	-40	-40	-50	-50	-60	-70	-70	-80	-80
5000	-10	-10	-20	-20	-20	-20	-30	-30	-30	-40	-40	-40	-50	-50	-60	-70	-80	-80	-90
6000	-10	-10	-20	-20	-20	-20	-30	-30	-30	-40	-40	-50	-50	-60	-60	-70	-80	-90	-90
7000	-10	-10	-20	-20	-20	-20	-30	-30	-30	-40	-40	-50	-50	-60	-70	-70	-80	-90	-100
8000	-10	-10	-20	-20	-20	-20	-30	-30	-30	-40	-40	-50	-60	-60	-70	-80	-90	-100	-100
9000	-10	-10	-20	-20	-20	-30	-30	-30	-40	-40	-50	-50	-60	-60	-70	-80	-90	-100	-110
10000	-10	-10	-20	-20	-20	-30	-30	-30	-40	-40	-50	-50	-60	-70	-80	-80	-90	-110	-110
11000	-10	-20	-20	-20	-20	-30	-30	-30	-40	-40	-50	-60	-60	-70	-80	-90	-100	-110	-120
12000	-10	-20	-20	-20	-20	-30	-30	-40	-40	-50	-50	-60	-70	-70	-80	-90	-100	-120	-120
13000	-10	-20	-20	-20	-20	-30	-30	-40	-40	-50	-50	-60	-70	-80	-90	-100	-110	-120	-130
14000	-10	-20	-20	-20	-30	-30	-30	-40	-40	-50	-60	-60	-70	-80	-90	-100	-120	-130	-140
15000	-10	-20	-20	-20	-30	-30	-30	-40	-40	-50	-60	-70	-70	-80	-100	-110	-120	-140	-150
16000	-10	-20	-20	-20	-30	-30	-30	-40	-40	-50	-60	-70	-80	-90	-100	-110	-130	-150	-150
17000	-20	-20	-20	-20	-30	-30	-40	-40	-50	-60	-60	-70	-80	-90	-110	-120	-140	-150	-160
18000	-20	-20	-20	-20	-30	-30	-40	-40	-50	-60	-70	-80	-90	-100	-110	-130	-140	-160	-170
19000	-20	-20	-20	-30	-30	-30	-40	-50	-50	-60	-70	-80	-90	-100	-120	-130	-150	-170	-180
20000	-20	-20	-20	-30	-30	-40	-40	-50	-60	-70	-80	-80	-100	-110	-120	-140	-160	-180	-200
21000	-20	-20	-20	-30	-30	-40	-40	-50	-60	-70	-80	-90	-100	-120	-130	-150	-170	-190	-210
22000	-20	-20	-20	-30	-30	-40	-40	-50	-60	-70	-80	-90	-110	-120	-140	-160	-180	-210	-220
23000	-20	-20	-30	-30	-30	-40	-50	-50	-60	-70	-80	-100	-110	-130	-150	-170	-190	-220	-230
24000	-20	-20	-30	-30	-40	-40	-50	-60	-70	-80	-90	-100	-120	-140	-160	-180	-210	-230	-250
25000	-20	-20	-30	-30	-40	-40	-50	-60	-70	-80	-90	-110	-130	-150	-170	-190	-220	-250	-270
26000	-20	-20	-30	-30	-40	-50	-50	-60	-70	-90	-100	-120	-130	-160	-180	-200	-230	-270	-280
27000	-20	-20	-30	-30	-40	-50	-60	-70	-80	-90	-110	-120	-140	-170	-190	-220	-250	-290	-300
28000	-20	-30	-30	-40	-40	-50	-60	-70	-80	-100	-110	-130	-150	-180	-200	-230	-270	-300	-320
29000	-20	-30	-30	-40	-40	-50	-60	-70	-90	-100	-120	-140	-160	-190	-220	-250	-290	-330	-350
30000	-20	-30	-30	-40	-50	-50	-70	-80	-90	-110	-130	-150	-170	-200	-230	-270	-310	-350	-370
31000	-20	-30	-30	-40	-50	-60	-70	-80	-100	-110	-130	-160	-180	-210	-250	-290	-330	-370	-400
32000	-20	-30	-40	-40	-50	-60	-70	-90	-100	-120	-140	-170	-200	-230	-270	-310	-350	-400	
33000	-20	-30	-40	-40	-50	-60	-80	-90	-110	-130	-150	-180	-210	-250	-280	-330	-380	-430	
34000	-30	-30	-40	-50	-60	-70	-80	-100	-120	-140	-160	-190	-230	-260	-300	-350	-400		
35000	-30	-30	-40	-50	-60	-70	-90	-100	-120	-150	-180	-210	-240	-280	-330	-380			
36000	-30	-30	-40	-50	-60	-80	-90	-110	-130	-160	-190	-220	-260	-300	-350	-410			
37000	-30	-40	-40	-50	-70	-80	-100	-120	-140	-170	-200	-240	-280	-330	-380				
38000	-30	-40	-50	-60	-70	-90	-110	-130	-150	-190	-220	-260	-300	-360	-410				
39000	-30	-40	-50	-60	-80	-90	-110	-140	-170	-200	-240	-280	-330	-390					
40000	-30	-40	-50	-70	-80	-100	-120	-150	-180	-220	-260	-310	-360	-420					
41000	-40	-50	-60	-70	-90	-110	-130	-160	-200	-230	-280	-330	-390						
42000	-40	-50	-60	-80	-90	-120	-140	-170	-210	-250	-300	-360	-420						
43000	-40	-50	-60	-80	-100	-130	-160	-190	-230	-280	-330	-390							
44000	-40	-50	-70	-90	-110	-140	-170	-200	-250	-300	-360	-420							
45000	-50	-60	-70	-90	-120	-150	-180	-220	-270	-320	-390								

Note: Shaded areas are above V_{MO}/M_{MO} and are for interpolation only.



Figure 4-5A (Sheet 1 of 2)

STANDBY ALTIMETER POSITION CORRECTION

EXAMPLE:

- A. Airspeed = 200KIAS
- B. Indicated Pressure Altitude = 20,000 FEET
- C. Altimeter Position Correction = -150 FEET
- D. Actual Pressure Altitude = 19,850 FEET

GEAR DOWN

ALT FEET	AIRSPEED - KIAS																		
	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	275
0	-10	-10	-10	-20	-20	-20	-30	-30	-40	-50	-50	-60	-70	-80	-90	-110	-120	-140	-150
1000	-10	-10	-10	-20	-20	-20	-30	-30	-40	-50	-60	-60	-70	-90	-100	-110	-130	-140	-150
2000	-10	-10	-10	-20	-20	-30	-30	-40	-40	-50	-60	-70	-80	-90	-100	-120	-130	-150	-160
3000	-10	-10	-20	-20	-20	-30	-30	-40	-40	-50	-60	-70	-80	-90	-110	-120	-140	-160	-170
4000	-10	-10	-20	-20	-20	-30	-30	-40	-50	-50	-60	-70	-90	-100	-110	-130	-150	-170	-180
5000	-10	-10	-20	-20	-20	-30	-30	-40	-50	-60	-70	-80	-90	-100	-120	-140	-160	-180	-190
6000	-10	-10	-20	-20	-30	-30	-40	-40	-50	-60	-70	-80	-90	-110	-130	-140	-170	-190	-200
7000	-10	-10	-20	-20	-30	-30	-40	-50	-50	-60	-70	-90	-100	-120	-130	-150	-170	-200	-210
8000	-10	-10	-20	-20	-30	-30	-40	-50	-60	-70	-80	-90	-110	-120	-140	-160	-180	-210	-220
9000	-10	-20	-20	-20	-30	-30	-40	-50	-60	-70	-80	-100	-110	-130	-150	-170	-200	-220	-240
10000	-10	-20	-20	-20	-30	-40	-40	-50	-60	-70	-90	-100	-120	-140	-160	-180	-210	-240	-250
11000	-10	-20	-20	-30	-30	-40	-50	-60	-70	-80	-90	-110	-120	-140	-170	-190	-220	-250	-270
12000	-10	-20	-20	-30	-30	-40	-50	-60	-70	-80	-100	-110	-130	-150	-180	-200	-230	-270	-280
13000	-10	-20	-20	-30	-30	-40	-50	-60	-70	-90	-100	-120	-140	-160	-190	-220	-250	-280	-300
14000	-20	-20	-20	-30	-40	-40	-50	-60	-80	-90	-110	-130	-150	-170	-200	-230	-260	-300	-320
15000	-20	-20	-30	-30	-40	-50	-60	-70	-80	-100	-110	-130	-160	-180	-210	-240	-280	-320	-340
16000	-20	-20	-30	-30	-40	-50	-60	-70	-90	-100	-120	-140	-170	-190	-220	-260	-300	-340	-360
17000	-20	-20	-30	-30	-40	-50	-60	-80	-90	-110	-130	-150	-180	-210	-240	-270	-320	-360	-390
18000	-20	-20	-30	-40	-40	-50	-70	-80	-100	-110	-140	-160	-190	-220	-250	-290	-340	-390	-410
19000	-20	-20	-30	-40	-50	-60	-70	-80	-100	-120	-140	-170	-200	-230	-270	-310	-360	-410	-440
20000	-20	-30	-30	-40	-50	-60	-70	-90	-110	-130	-150	-180	-210	-250	-290	-330	-380	-440	-470
21000	-20	-30	-30	-40	-50	-60	-80	-90	-110	-140	-160	-190	-230	-260	-310	-350	-410	-470	-500
22000	-20	-30	-40	-40	-50	-70	-80	-100	-120	-150	-170	-200	-240	-280	-330	-380	-440	-500	-540
23000	-20	-30	-40	-50	-60	-70	-90	-110	-130	-150	-180	-220	-260	-300	-350	-410	-470	-540	-570
24000	-20	-30	-40	-50	-60	-80	-90	-110	-140	-160	-200	-230	-270	-320	-370	-430	-500	-570	-610
25000	-20	-30	-40	-50	-60	-80	-100	-120	-150	-180	-210	-250	-290	-340	-400	-460	-540	-610	-660
26000	-30	-30	-40	-50	-70	-90	-110	-130	-160	-190	-220	-270	-310	-370	-430	-500	-570	-660	-700
27000	-30	-40	-50	-60	-70	-90	-110	-140	-170	-200	-240	-280	-340	-390	-460	-530	-610	-710	-760
28000	-30	-40	-50	-60	-80	-100	-120	-150	-180	-210	-260	-300	-360	-420	-490	-570	-660	-760	-810
29000	-30	-40	-50	-70	-80	-100	-130	-160	-190	-230	-270	-330	-390	-450	-530	-610	-710	-810	-870
30000	-30	-40	-50	-70	-90	-110	-140	-170	-200	-250	-290	-350	-410	-490	-570	-660	-760	-870	-930
31000	-30	-40	-60	-70	-90	-120	-150	-180	-220	-260	-320	-380	-440	-520	-610	-710	-820	-940	-1000
32000	-40	-50	-60	-80	-100	-130	-160	-190	-230	-280	-340	-400	-480	-560	-660	-760	-880	-1010	
33000	-40	-50	-70	-80	-110	-130	-170	-210	-250	-300	-360	-430	-510	-600	-710	-820	-950	-1090	
34000	-40	-50	-70	-90	-110	-140	-180	-220	-270	-330	-390	-470	-550	-650	-760	-880	-1020		
35000	-40	-60	-70	-100	-120	-150	-190	-240	-290	-350	-420	-500	-600	-700	-820	-950			
36000	-50	-60	-80	-100	-130	-170	-210	-260	-310	-380	-460	-540	-640	-760	-880	-1020			
37000	-50	-70	-90	-110	-140	-180	-220	-280	-340	-410	-490	-590	-700	-820	-960				
38000	-50	-70	-90	-120	-150	-190	-240	-300	-370	-450	-540	-640	-760	-890	-1040				
39000	-60	-80	-100	-130	-170	-210	-260	-330	-400	-490	-590	-700	-830	-970					
40000	-60	-80	-110	-140	-180	-230	-290	-360	-440	-530	-640	-760	-900	-1060					
41000	-70	-90	-120	-150	-200	-250	-310	-390	-470	-580	-690	-830	-980						
42000	-70	-100	-130	-170	-210	-270	-340	-420	-520	-630	-750	-900	-1060						
43000	-80	-100	-140	-180	-230	-290	-370	-460	-560	-680	-820	-980							
44000	-80	-110	-150	-190	-250	-320	-400	-500	-610	-740	-890	-1070							
45000	-90	-120	-160	-210	-270	-350	-440	-540	-670	-810	-970								

Note: Shaded areas are above V_{MO}/M_{MO} and are for interpolation only.



Figure 4-5A (Sheet 2)

STALL SPEEDS - KCAS

CONDITIONS:

Landing Gear - UP or DOWN
Engines - IDLE THRUST

ANGLE OF BANK DEG	FLAP SETTING - UP WEIGHT - LBS												
	12375	12200	12000	11800	11600	11400	11200	11000	10500	10000	9000	8000	7500
0	103	102	101	100	100	99	98	97	95	93	88	83	80
10	104	103	102	101	100	100	99	98	96	94	89	83	80
20	106	105	105	104	103	102	101	100	98	96	91	85	82
30	110	110	109	108	107	106	105	104	102	100	95	89	86
40	117	117	116	115	114	113	112	111	109	106	101	95	91
50	128	127	126	125	124	123	122	121	119	116	110	103	100
60	145	144	143	142	141	140	139	137	134	131	125	117	113

ANGLE OF BANK DEG	FLAP SETTING - 15 DEG WEIGHT - LBS												
	12375	12200	12000	11800	11600	11400	11200	11000	10500	10000	9000	8000	7500
0	94	94	93	92	92	91	90	89	87	85	81	76	73
10	95	94	94	93	92	91	91	90	88	86	82	77	74
20	97	97	96	95	94	94	93	92	90	88	84	78	76
30	101	101	100	99	98	98	97	96	94	92	87	82	79
40	108	107	106	105	105	104	103	102	100	97	93	87	84
50	118	117	116	115	114	113	112	111	109	106	101	95	91
60	133	133	132	131	129	128	127	126	123	121	115	108	104

ANGLE OF BANK DEG	FLAP SETTING - 35 DEG WEIGHT - LBS												
	12375	12200	12000	11800	11600	11400	11200	11000	10500	10000	9000	8000	7500
0	89	88	88	87	86	85	85	84	82	80	76	72	69
10	90	89	88	88	87	86	85	85	83	81	77	72	70
20	92	91	90	90	89	88	87	87	85	83	79	74	71
30	96	95	94	93	93	92	91	90	88	86	82	77	74
40	102	101	100	99	98	98	97	96	94	92	87	82	79
50	111	110	109	108	108	107	106	105	103	100	95	89	86
60	126	125	124	123	122	121	120	119	116	114	108	101	98

NOTE

- Maximum altitude loss to regain level flight after a fully developed stall was demonstrated to be 600 feet for a multi-engine idle power stall with flaps 35 and landing gear extended, and 700 feet for a single-engine power-on stall with flaps and gear retracted (6 degree maximum nose down pitch attitude in recovery). Prompt input of recovery controls and power at the onset of stall warning will result in less than 100 feet of altitude loss.
- The flaps UP and flaps 15° stall speeds may increase approximately 4.5 knots with residual ice on the airplane.

Figure 4-6

INTERNATIONAL STANDARD ATMOSPHERE (ISA)

ALTITUDE FEET	ISA DEG. C	ALTITUDE FEET	ISA DEG. C
SEA LEVEL	15.0	23000	-30.5
1000	13.0	24000	-32.5
2000	11.0	25000	-34.5
3000	9.1	26000	-36.5
4000	7.1	27000	-38.4
5000	5.1	28000	-40.4
6000	3.1	29000	-42.4
7000	1.1	30000	-44.4
8000	-0.8	31000	-46.3
9000	-2.8	32000	-48.3
10000	-4.8	33000	-50.3
11000	-6.8	34000	-52.3
12000	-8.8	35000	-54.2
13000	-10.7	36000	-56.2
14000	-12.7	37000	-56.5
15000	-14.7	38000	-56.5
16000	-16.7	39000	-56.5
17000	-18.7	40000	-56.5
18000	-20.6	41000	-56.5
19000	-22.6	43000	-56.5
20000	-24.6	45000	-56.5
21000	-26.6		
22000	-28.5		

Figure 4-7

TAKEOFF THRUST
THRUST SETTING PROCEDURE FOR TAKEOFF

Check recommended takeoff thrust setting chart for the fan speed for the takeoff altitude and temperature. Set N_1 reference setting at chart valve. Before takeoff, move throttle until fan speed agrees with N_1 reference setting. Takeoff thrust is allowed for a maximum of five minutes (10 minutes for single-engine emergency procedures). Fan speeds above the values on the chart may exceed the engine thrust used to determine V_{MCG} and V_{MCA} . Values below these lines will not meet the performance in this section.

NOTE

Indicated RAT may be unreliable when on the ground. Reported surface temperatures from the appropriate ground stations should be utilized for determining the takeoff thrust setting.

EXAMPLE 1:

Anti-Ice Systems = OFF

- A Ambient Temperature = 15°C
- B Pressure Altitude = 2000 FEET
- C N_1 = 103.0% RPM

EXAMPLE 2:

Anti-Ice Systems = ON - ALL (Engine, Wing, and Windshield)

- A Ambient Temperature = 0°C
- B Pressure Altitude = 2000 FEET
- C N_1 = 100.5% RPM

TAKEOFF/GO AROUND THRUST

A10788

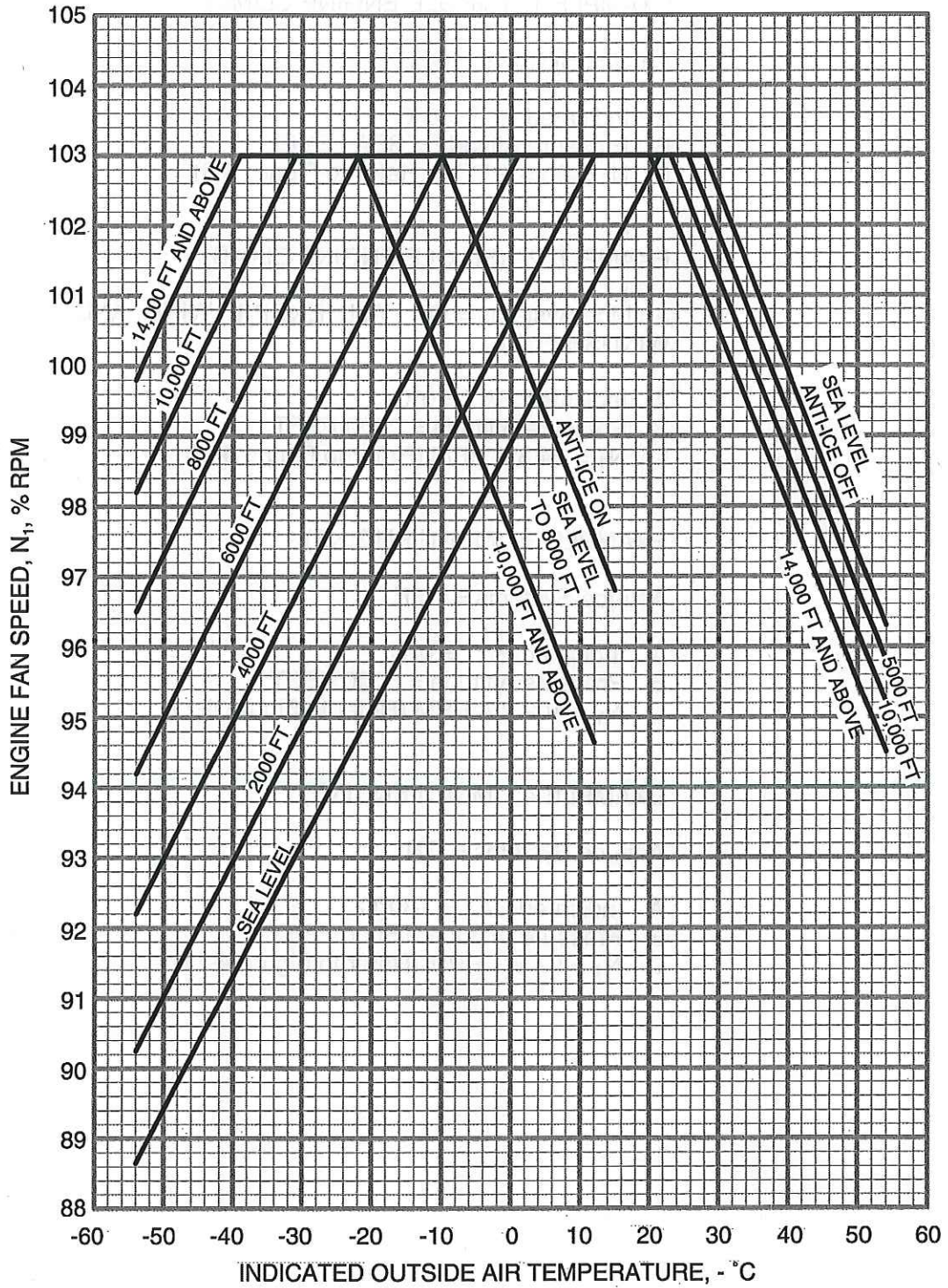


Figure 4-8

MAXIMUM CONTINUOUS THRUST

EXAMPLE 1: (SINGLE ENGINE CLIMB)

Anti-Ice Systems = OFF

- A Indicated RAT = 0°C
- B Pressure Altitude = SEA LEVEL
- C N_1 = 98.6% RPM (Refer to Figure 4-9)

EXAMPLE 2: (SINGLE ENGINE CLIMB)

Anti-Ice Systems = ON - ALL (ENGINE, WING, AND WINDSHIELD)

- A Indicated RAT = 0°C
- B Pressure Altitude = 2000 FEET
- C N_1 = 94.8% RPM (Refer to Figure 4-10)

EXAMPLE 3: (MULTI ENGINE)

Anti-Ice Systems = OFF

- A Indicated RAT = 0°C
- B Pressure Altitude = 5000 FEET
- C N_1 = 102.2% RPM (Refer to Figure 4-11)

EXAMPLE 4: (MULTI ENGINE)

Anti-Ice Systems = ON

- A Indicated RAT = -30°C
- B Pressure Altitude = 5000 FEET
- C N_1 = 97.9% RPM (Refer to Figure 4-11)

**MAXIMUM CONTINUOUS THRUST
SINGLE ENGINE
ANTI-ICE OFF**

A10789

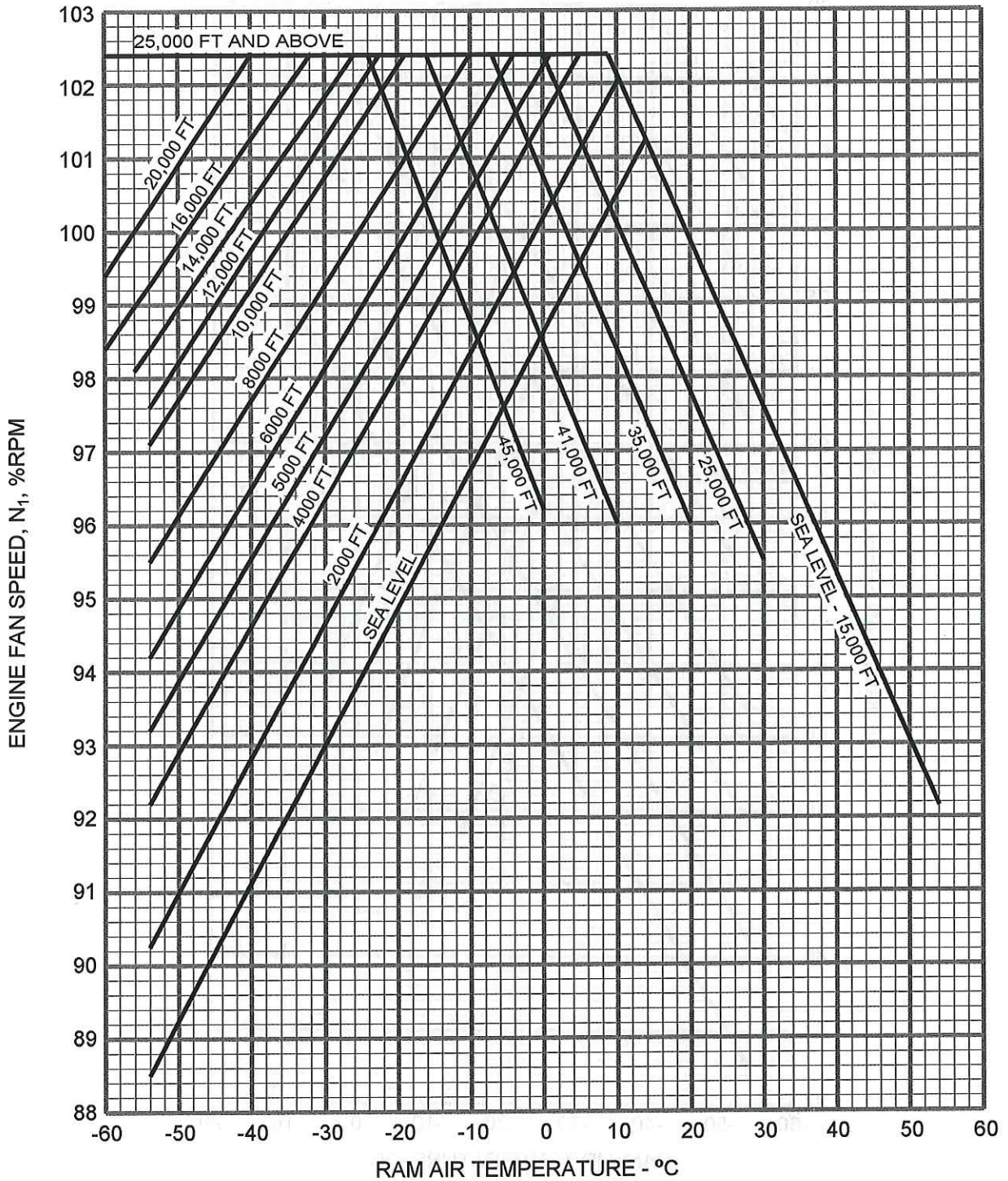


Figure 4-9

**MAXIMUM CONTINUOUS THRUST
SINGLE ENGINE
ANTI-ICE ON**

A11021

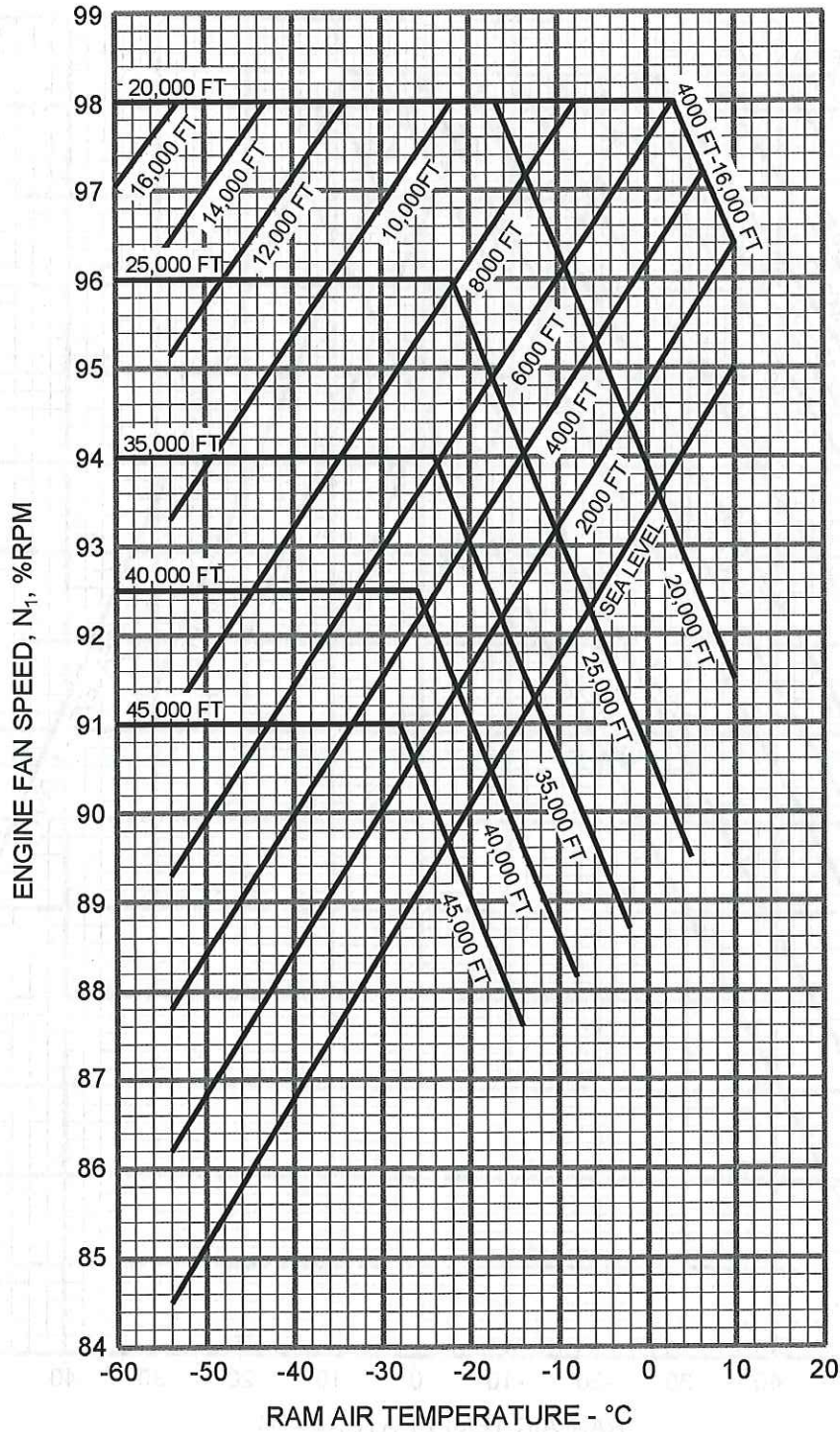


Figure 4-10

MAXIMUM CONTINUOUS THRUST MULTI-ENGINE ANTI-ICE OFF

A11101

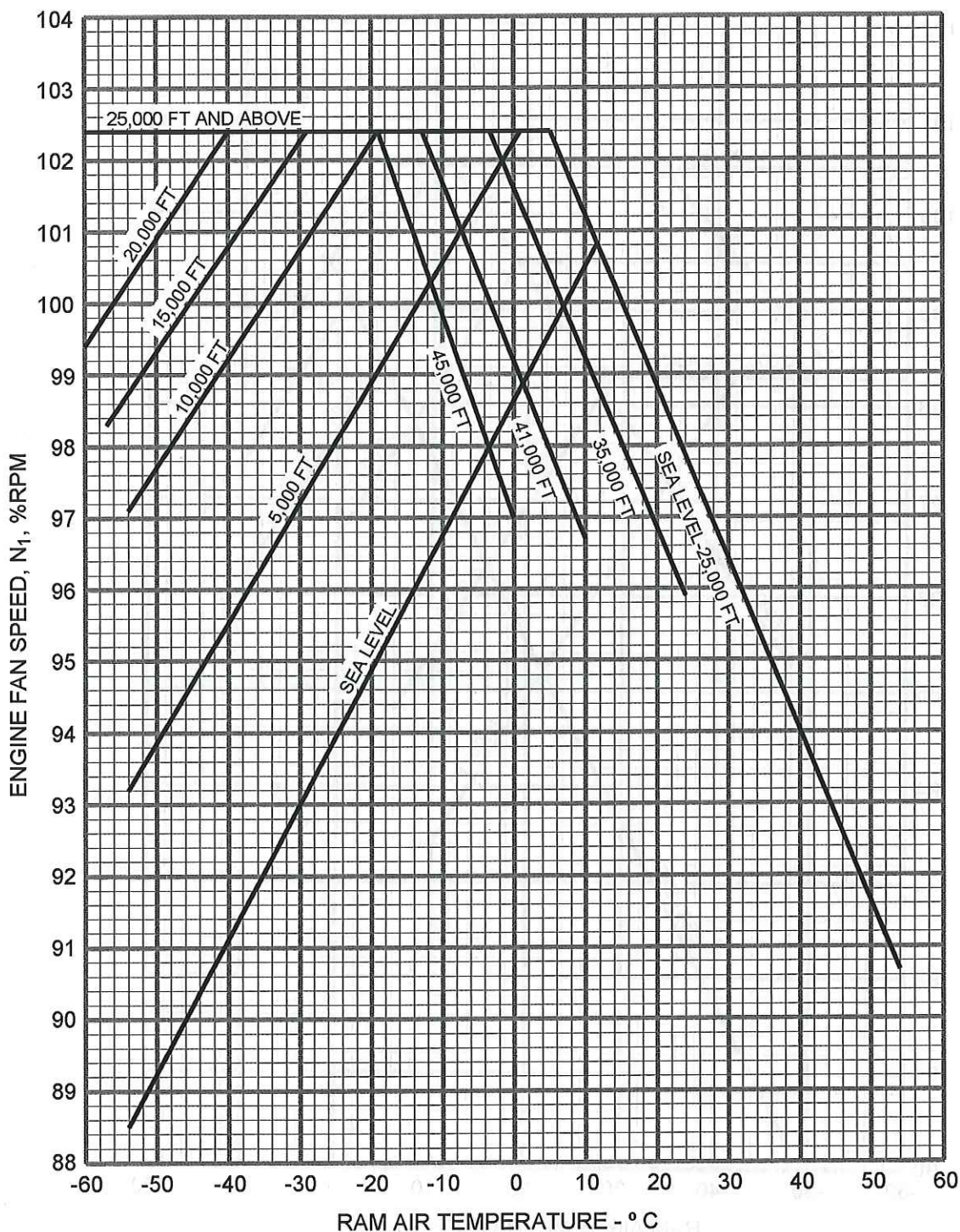


Figure 4-11 (Sheet 1 of 2)

**MAXIMUM CONTINUOUS THRUST
MULTI-ENGINE
ANTI-ICE ON**

A11123

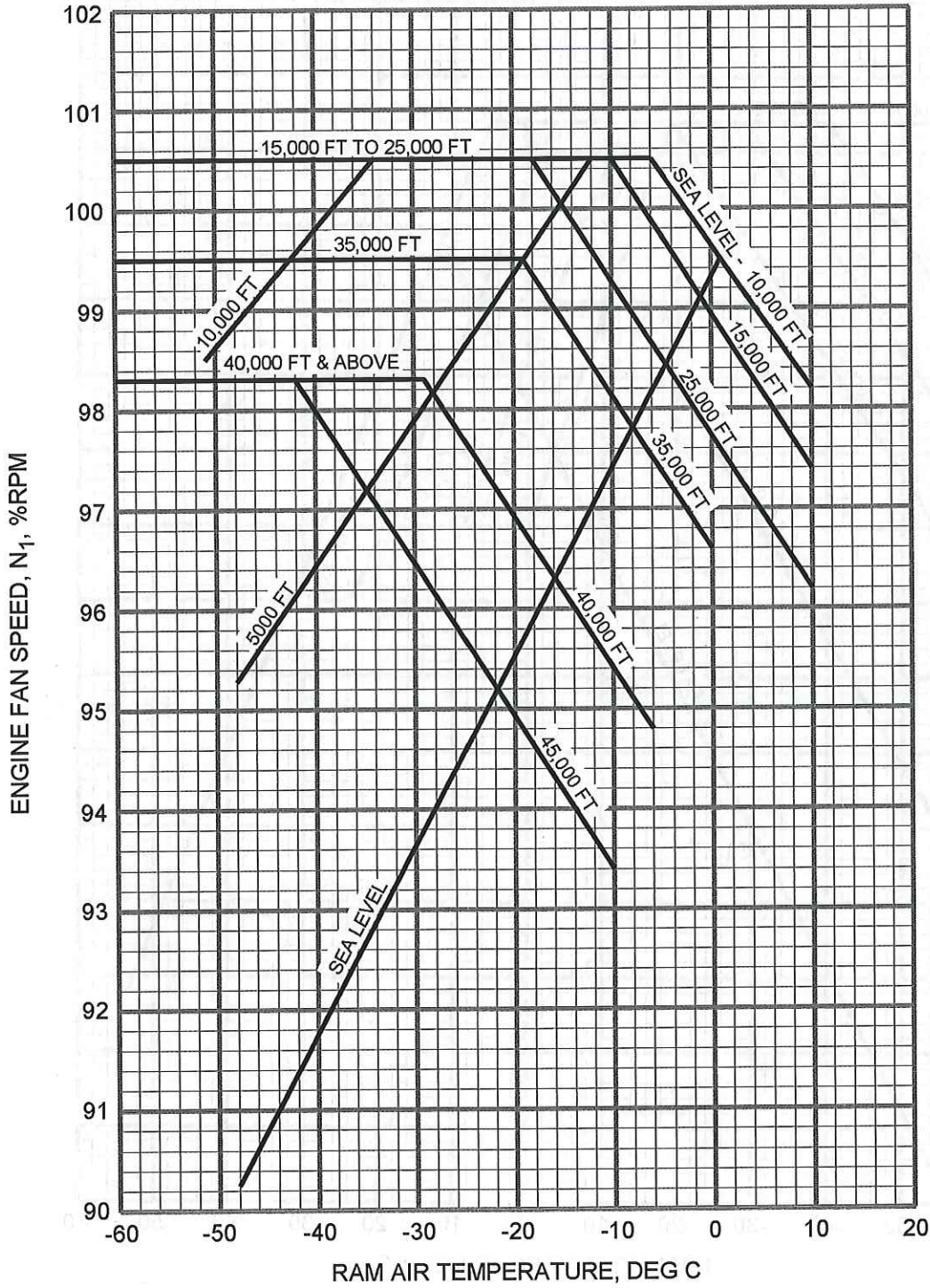


Figure 4-11(Sheet 2)

BUFFET ONSET
BUFFET AIRSPEED - KIAS

LOW
EXAMPLE:
INDICATED MACH = 0.25
PRESSURE ALTITUDE = 5,000 FEET
WEIGHT = 12,000 POUNDS
BUFFET ONSET
LOAD FACTOR = 2.05 G'S
BANK ANGLE = 61 DEGREES

HIGH
EXAMPLE:
INDICATED MACH = 0.50
PRESSURE ALTITUDE = 25,000 FEET
WEIGHT = 12,000 POUNDS
BUFFET ONSET
LOAD FACTOR = 2.75 G'S
BANK ANGLE = GREATER THAN
65 DEGREES

A11252

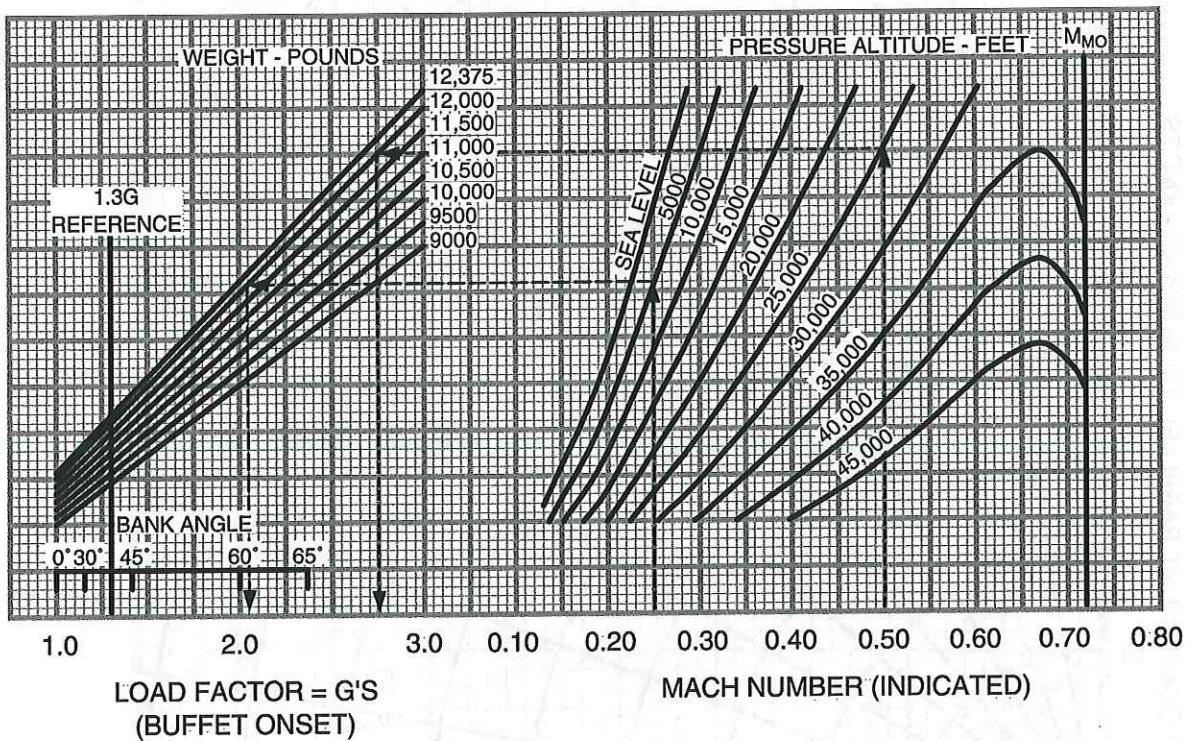


Figure 4-12

CROSSWIND COMPONENT

EXAMPLE:

WIND VELOCITY = 30 KNOTS

ANGLE BETWEEN WIND DIRECTION AND RUNWAY = 30°

CROSSWIND COMPONENT = 15 KNOTS

WIND COMPONENT PARALLEL TO RUNWAY = 26 KNOTS

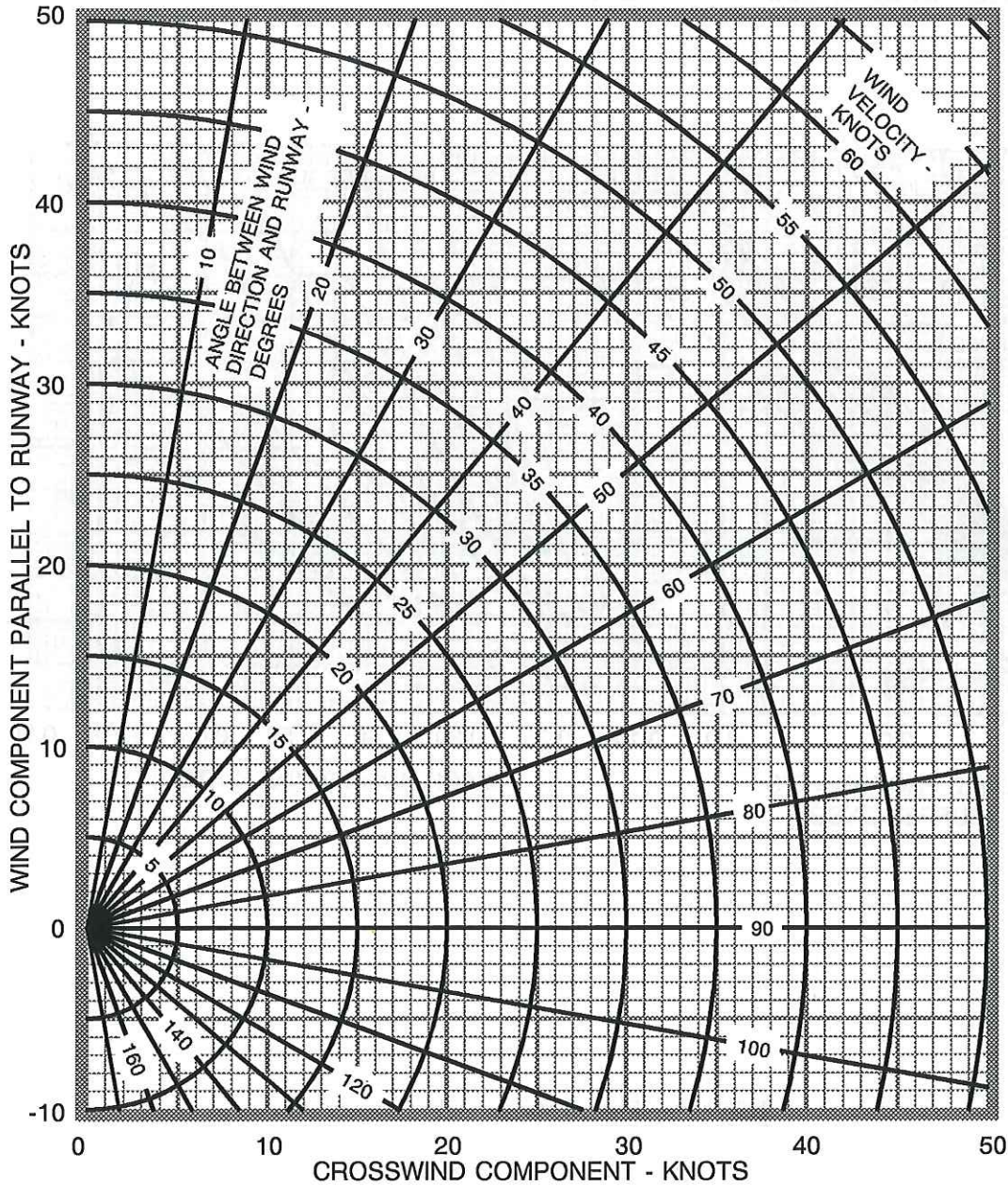
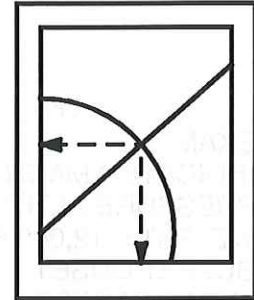


Figure 4-13