Boeing 727-200

Performance Handbook

This document may only be used for training purposes.

Stall Speeds

These tables present the Stall Speeds and the Stick Shaker Speeds as a function of gross weight and flap setting.

Stall Speeds

Gross Weight pounds x 1000	Flap Setting					
	up	5	15	25	30	40
	Stall Speed KIAS					
170	163	130	121	111	107	110
165	160	128	118	109	106	108
160	157	125	116	107	104	105
155	154	123	114	105	102	102
150	151	121	112	103	100	100
145	148	118	109	101	98	97
140	145	116	107	99	96	94
135	142	113	105	97	94	92
130	139	111	102	95	92	89
125	136	109	100	92	89	87
120	133	106	98	90	87	84
115	130	104	95	88	85	82
110	126	101	93	86	83	80
105	123	99	91	84	82	77
100	120	96	89	82	80	75

Stick Shaker Speeds

Gross Weight pounds x 1000	Flap Setting					
	up	5	15	25	30	40
	Stick Shaker Speed KIAS					
170	175	143	134	125	124	118
165	173	141	132	123	122	116
160	170	139	130	121	120	114
155	167	137	128	119	117	112
150	164	134	126	117	115	109
145	162	132	124	115	113	107
140	159	130	122	113	110	105
135	156	127	120	111	108	103
130	153	125	117	109	106	100
125	150	123	115	107	103	98
120	147	120	113	105	101	96
115	144	118	111	102	98	94
110	141	115	108	100	96	91
105	138	112	106	98	93	89
100	134	110	103	95	90	86

Speeds applicable to takeoff and landing altitudes only.
Values are based on most forward C.G.

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Temperature Conversion

Use the table to convert Total Air Temperature (TAT) to Outside Air Temperature (OAT).

	INDICATED MACH NUMBER									
	.30	.40	.50	.60	.70	.76	.78	.80	.82	.84
IND TAT - °C	TRUE OUTSIDE AIR TEMPERATURE - DEGREES C									
70				47	39	34	33	31	29	28
65			49	42	35	30	28	27	25	23
60		50	44	38	30	25	24	22	21	19
55	49	45	39	33	26	21	19	18	16	14
50	44	40	35	28	21	17	15	13	12	10
45	39	35	30	24	17	12	10	9	7	6
40	34	30	25	19	12	8	6	4	3	1
35	30	25	20	14	7	3	2	0	-2	-3
30	25	21	16	10	3	-1	-3	-4	-6	-7
25	20	16	11	5	-2	-6	-7	-9	-10	-12
20	15	11	6	0	-6	-10	-12	-13	-15	-16
15	10	6	1	-4	-11	-15	-16	-18	-19	-21
10	5	1	-3	-9	-15	-19	-21	-22	-24	-25
5	0	-4	-8	-14	-20	-24	-25	-27	-28	-29
0	-5	-8	-13	-18	-24	-28	-30	-31	-32	-34
-5	-10	-13	-18	-23	-29	-33	-34	-35	-37	-38
-10	-15	-18	-23	-28	-33	-37	-39	-40	-41	-43
-15	-20	-23	-27	-32	-38	-42	-43	-44	-46	-47
-20	-24	-28	-32	-37	-43	-46	-47	-49	-50	-51
-25	-29	-33	-37	-42	-47	-51	-52	-53	-54	-56
-30	-34	-38	-42	-46	-52	-55	-56	-58	-59	-60
-35	-39	-42	-46	-51	-56	-60	-61	-62	-63	-64
-40	-44	-47	-51	-56	-61	-64	-65	-66	-68	-69

Altimeter and Airspeed Calibration

Corrections due to static port position error are minimal for Captain, F/O, and auxiliary static ports.
They are less than 1 knot, .001 Mach, or 20 feet of altitude for all flap positions between 1.2 V_S and V_{MO}, M_{MO} or V_{FE} as applicable. This is true with the landing gear retracted or extended, also in taxi attitude on the ground.

Since these corrections are so minimal, desired speed and altitude will be flown at that indicated value.

FLIGHT PLANNING

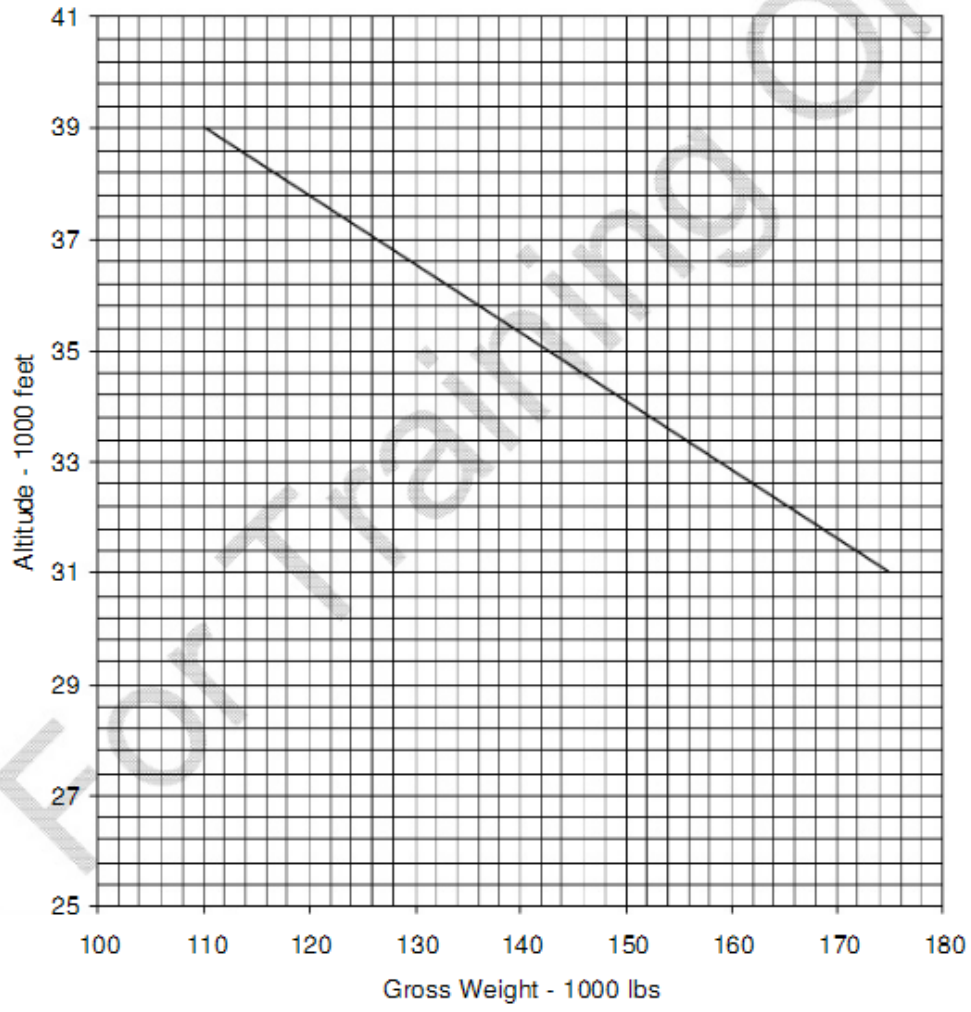
This chapter contains flight planning data to determine trip fuel/time, and reserve fuel. The data includes engine bleed effects for normal air conditioning operation.

Flight Planning Allowances

Simplified Flight Planning charts enable rapid determination of estimated trip time and fuel from brake release to landing. Additional flight planning information including maneuver allowances is summarized below.
Fuel can be saved by minimizing APU utilization. Average APU fuel flow rates under normal operation are 230 lbs per hour on the ground.
Taxi fuel allowance is approximately 500 lbs.

Optimum Altitude

Optimum altitude for best fuel mileage is presented for .78M speed schedule.



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Holding

This table provides total fuel flow information necessary for planning holding and reserve fuel requirements. The chart is based on a racetrack pattern in clean configuration and minimum drag airspeed.

Pressure Altitude ft	Zero Fuel Weight - pounds x 1000			
	140	130	120	110
	Holding Fuel Flow- lbs/hr			
9000	6784	6630	6508	6376
8000	6850	6702	6568	6442
7000	6920	6776	6634	6512
6000	6992	6852	6706	6586
5000	7068	6930	6786	6664
4000	7148	7010	6870	6746
3000	7230	7090	6960	6834
2000	7318	7174	7056	6924
1000	7406	7258	7158	7018
0	7500	7344	7266	7116

Flight Time and Fuel Table

A Flight Time and Fuel Table is provided for .78M speed schedule at constant altitudes to determine trip time and trip fuel from brake release to touchdown.

APU usage, taxi, inflight flaps down maneuvering (other than straight in approach) and reserve fuel should be added to the trip fuel obtained from the table to obtain the total fuel required. These fuel allowances are presented under Flight Planning Allowances. Additional fuel for extended inflight traffic delays should be determined from the holding table.

Example:
Segment Distance = 800 NM
Flight Level = 330
Wind in FL 330 = 35 kts HW
Landing Weight = 130,000 lbs

Find:
TAS in FL 330 = 454 kts
Still Air Dist = 867 NAM

Flight Fuel from table = 18,253 lbs, LW correction = 800 lbs.
Flight Fuel = 19,053 lbs
Flight Time = 2:00 hrs

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Flight Time & Fuel Table

STILL AIR	FLIGHT LEVEL															
DISTANCE	90	110	130	150	170	190	210	230	250	270	290	310	330	350	370	390
(NAM)	285	407	419	431	444	456	470	474	470	466	462	458	454	450	447	447
100	0:24	0:20	0:22	0:24	0:27	0:29	0:30	0:33	0:36	0:38	0:41	0:44	0:50	0:56	0:54	0:52
	4.37	4.24	4.60	5.09	5.58	5.85	6.34	6.95	7.43	7.93	8.43	9.16	10.24	10.90	9.65	9.08
200	0:45	0:35	0:34	0:33	0:33	0:32	0:32	0:33	0:36	0:38	0:41	0:44	0:50	0:56	0:54	0:52
	6.59	6.78	6.70	7.24	6.63	6.50	6.60	6.95	7.43	7.93	8.43	9.16	10.24	10.90	9.65	9.08
300	1:06	0:49	0:48	0:47	0:46	0:46	0:45	0:44	0:45	0:45	0:45	0:45	0:50	0:56	0:54	0:52
	8.83	9.43	9.25	10.41	8.96	8.75	8.76	8.83	8.81	8.87	8.98	9.24	10.24	10.90	9.65	9.08
400	1:27	1:04	1:03	1:01	1:00	0:59	0:57	0:57	0:57	0:58	0:58	0:58	0:59	0:59	0:59	0:59
	11.07	12.09	11.80	13.60	11.30	11.00	10.93	10.93	10.77	10.69	10.67	10.82	11.18	11.22	10.20	9.74
500	1:48	1:19	1:17	1:15	1:13	1:12	1:10	1:10	1:10	1:11	1:11	1:11	1:12	1:12	1:12	1:12
	13.32	14.76	14.36	16.81	13.65	13.26	13.10	13.03	12.73	12.52	12.37	12.41	12.67	12.63	11.58	11.09
600	2:09	1:34	1:31	1:29	1:27	1:25	1:23	1:22	1:23	1:23	1:24	1:24	1:25	1:25	1:26	1:26
	15.59	17.45	16.94	20.03	16.01	15.53	15.29	15.15	14.71	14.37	14.09	14.02	14.18	14.06	12.97	12.46
700	2:30	1:48	1:46	1:43	1:40	1:38	1:36	1:35	1:36	1:36	1:37	1:37	1:38	1:39	1:39	1:39
	17.87	20.14	19.52	23.27	18.38	17.81	17.49	17.27	16.70	16.23	15.81	15.64	15.70	15.51	14.39	13.84
800	2:51	2:03	2:00	1:57	1:54	1:51	1:48	1:48	1:48	1:49	1:50	1:51	1:51	1:52	1:53	1:53
	20.16	22.85	22.11	26.52	20.76	20.10	19.69	19.41	18.70	18.10	17.55	17.27	17.23	16.98	15.82	15.24
900	3:12	2:18	2:14	2:11	2:07	2:04	2:01	2:00	2:01	2:02	2:03	2:04	2:05	2:05	2:06	2:06
	22.47	25.57	24.72	29.80	23.15	22.39	21.91	21.55	20.72	19.98	19.30	18.92	18.78	18.46	17.26	16.66
1000	3:33	2:33	2:29	2:25	2:21	2:18	2:14	2:13	2:14	2:15	2:16	2:17	2:18	2:19	2:20	2:19
	24.78	28.30	27.33	33.09	25.55	24.69	24.13	23.70	22.75	21.87	21.06	20.58	20.35	19.96	18.73	18.10
1100	3:54	2:47	2:43	2:39	2:34	2:31	2:27	2:26	2:27	2:28	2:29	2:30	2:31	2:32	2:33	2:33
	27.11	31.05	29.95	36.39	27.96	27.01	26.37	25.87	24.78	23.78	22.83	22.26	21.94	21.49	20.21	19.56
1200	4:15	3:02	2:57	2:53	2:48	2:44	2:39	2:38	2:39	2:41	2:42	2:43	2:44	2:45	2:46	2:46
	29.45	33.80	32.59	39.72	30.38	29.32	28.62	28.04	26.83	25.70	24.62	23.95	23.54	23.02	21.72	21.03
1300	4:36	3:17	3:12	3:07	3:01	2:57	2:52	2:51	2:52	2:54	2:55	2:56	2:58	2:59	3:00	3:00
	31.80	36.57	35.23	43.06	32.81	31.65	30.87	30.23	28.90	27.63	26.42	25.65	25.15	24.58	23.24	22.52
1400	4:57	3:32	3:26	3:20	3:15	3:10	3:05	3:04	3:05	3:06	3:08	3:09	3:11	3:12	3:13	3:13
	34.17	39.35	37.88	46.41	35.25	33.98	33.14	32.42	30.97	29.57	28.23	27.37	26.79	26.16	24.78	24.03
1500	5:18	3:46	3:40	3:34	3:28	3:23	3:18	3:16	3:18	3:19	3:21	3:22	3:24	3:25	3:27	3:27
	36.54	42.14	40.55	49.79	37.69	36.33	35.42	34.62	33.06	31.52	30.05	29.10	28.43	27.75	26.33	25.56
1600	5:39	4:01	3:55	3:48	3:42	3:37	3:31	3:29	3:31	3:32	3:34	3:35	3:37	3:39	3:40	3:40
	38.93	44.94	43.22	53.18	40.15	38.68	37.70	36.84	35.16	33.49	31.88	30.85	30.10	29.36	27.91	27.11
1700	6:00	4:16	4:09	4:02	3:56	3:50	3:43	3:42	3:43	3:45	3:47	3:48	3:50	3:52	3:54	3:53
	41.33	47.76	45.90	56.59	42.62	41.04	40.00	39.06	37.27	35.47	33.73	32.61	31.78	30.99	29.50	28.67
1800	6:21	4:31	4:23	4:16	4:09	4:03	3:56	3:54	3:56	3:58	4:00	4:02	4:04	4:05	4:07	4:07
	43.74	50.59	48.60	60.01	45.10	43.40	42.30	41.30	39.39	37.46	35.59	34.38	33.47	32.64	31.11	30.25
1900	6:43	4:45	4:38	4:30	4:23	4:16	4:09	4:07	4:09	4:11	4:13	4:15	4:17	4:19	4:20	4:20
	46.16	53.43	51.30	63.46	47.59	45.78	44.62	43.54	41.52	39.46	37.46	36.17	35.19	34.30	32.74	31.85
2000	7:04	5:00	4:52	4:44	4:36	4:29	4:22	4:20	4:22	4:24	4:26	4:28	4:30	4:32	4:34	4:34
	48.60	56.28	54.01	66.92	50.09	48.16	46.95	45.79	43.67	41.48	39.34	37.97	36.91	35.99	34.38	33.47

Based on: Landing Weight = 110,000 lbs

If actual landing weight is above 110,000 lbs, ADD a fuel burn correction of 200 lbs for each 5,000 lbs increament of additional landing weight.

CLIMB: 250 / 300 / M.78

CRUISE: 250 / 350 / M.78

DESCENT: 280 / M.78

Still Air Distance:

$$SAD = NM \frac{V_{TAS}}{V_{TAS} \pm V_W}$$

Example:

600	1:25
	14.06

- Flight Time from start of takeoff roll to landing (h:m)
- Flight Fuel from start of takeoff roll to lanidng (1000 lbs)

TAKEOFF PERFORMANCE

Introduction

This chapter contains data to determine takeoff performance limitations, based on engine bleed effects for normal air conditioning operation and antiice off, i.e., two packs on, one pack bleed from each engine. The data is presented in simplified form and is therefore conservative. In the event of any conflict between data presented in this section and those contained in the Approved Airplane Flight Manual, the Flight Manual shall always take precedence.

Performance Limited Takeoff Weight

The Performance Limited Takeoff Weight (PTOW) is the least of the field length, climb, and tire speed limit weights.

Altimeter Setting To Station Pressure

The determination of thrust setting and takeoff/landing performance generally requires station pressure altitude. If station pressure or station pressure altitude are not available, enter the chart with altimeter setting (QNH) and read the pressure altitude adjustment. Apply this adjustment to the station elevation to obtain station pressure altitude.

For boundary QNH values, read the midpoint between tabulated adjustments to elevation, e.g., for QNH of 29.66 inches (1004 mb), the elevation adjustment is 250 ft.
Alternatively, station pressure altitude may be determined by setting the cockpit altimeter to 29.92 inches (1013.2 mb); the altimeter will then read station pressure altitude.

Wind Component

The Wind Component chart provides crosswind and head/tail wind components, appropriate to the runway headings, reported wind velocity and direction. To use the chart, find the intersection between reported wind velocity in knots (circular lines) and the angle in degrees between reported wind direction and the runway (radial lines). Then read head/tail wind component to the left and crosswind component from the bottom scale.

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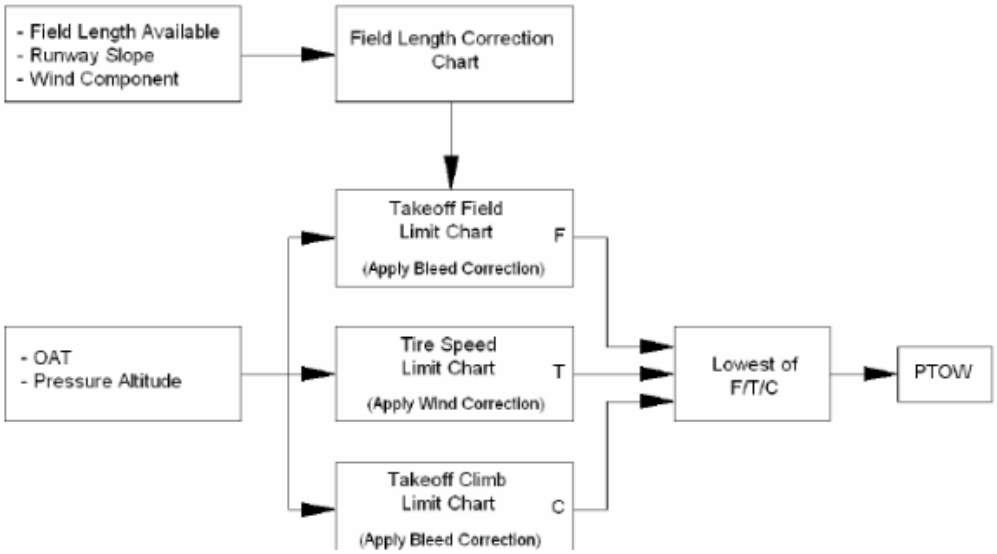
PERFORMANCE LIMITED TAKEOFF WEIGHT DETERMINATION PROCEDURE

Atmospheric Conditions:	Runway Characteristics:
- QNH - OAT - Wind	- Field Length Available - Slope - Field Elevation

1. With Wind, Slope, and Field Length Available enter Field Length Correction Chart (5.3.5) and obtain Corrected Field Length.
2. With QNH and Field Elevation enter Altimeter Setting to Station Pressure Table (5.3.3) and obtain Pressure Altitude.
3. With Corrected Field Length (step 1), OAT, and Pressure Altitude (step 2) enter Takeoff Field Limit Chart (5.3.6) and obtain Field Length Limited Takeoff Weight. Adjust for Bleed Configuration.
4. With OAT and Pressure Altitude (step 2) enter Takeoff Climb Limit Chart (5.3.7) and obtain Climb Limited Takeoff Weight. Adjust for Bleed Configuration.
5. With OAT and Pressure Altitude (step 2) enter Tire Speed Limited Weight Chart (5.3.8) and obtain Tire Speed Limited Weight. Adjust obtained weight for wind.
6. Compare the obtained limiting weights from steps 3, 4, and 5. Use the SMALLER one as the Performance Limited Takeoff Weight.



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ALTIMETER SETTING TO STATION PRESSURE

QNH IN. HG.	Correction to Elevation for Pressure Altitude	QNH MILLIBARS
28.81 to 28.91	1000	976 to 979
28.91 to 29.02	900	979 to 983
29.02 to 29.12	800	983 to 986
29.12 to 29.23	700	986 to 990
29.23 to 29.34	600	990 to 994
29.34 to 29.44	500	994 to 997
29.44 to 29.55	400	997 to 1001
29.55 to 29.66	300	1001 to 1004
29.66 to 29.76	200	1004 to 1008
29.76 to 29.87	100	1008 to 1012
29.87 to 29.97	0	1012 to 1015
29.97 to 30.08	-100	1015 to 1019
30.08 to 30.19	-200	1019 to 1022
30.19 to 30.30	-300	1022 to 1026
30.30 to 30.41	-400	1026 to 1030
30.41 to 30.52	-500	1030 to 1034
30.52 to 30.63	-600	1034 to 1037
30.63 to 30.74	-700	1037 to 1041

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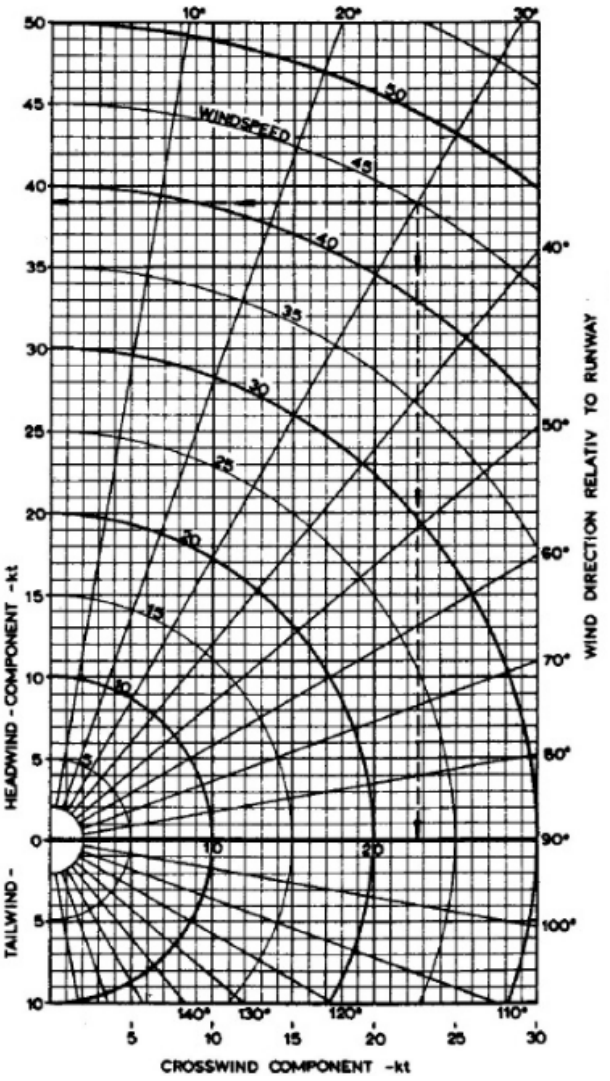
WIND COMPONENT



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Takeoff Field Corrections

Enter the chart with field length available and correct for slope and wind.

Takeoff Field Limit

Maximum field length limited brake release weights are presented for all certified takeoff flap settings. The field length available is the amount of paved surface which may be used to accelerate to the decision speed and either stop at the end of the runway or climb to 35 ft. The field limited weight does not account for clearway or stopway. The reference takeoff condition is flap position 15, zero slope, and zero wind. To determine the field length limit brake release weight, enter the chart with OAT, move horizontally to airport pressure altitude and project a line vertically down. Now enter the chart with the Field Length corrected for wind and slope and move horizontally until the vertically line from the airport pressure altitude is intersected. At the intersection of both lines read the Field Length Limited Weight.

Adjust the field length limit weight according to the notes below the chart to account for the appropriate engine bleed configuration.

Takeoff Climb Limit

Maximum climb limited brake release weights are presented for all certified takeoff flap settings. The weights are limited by second segment climb performance and do not account for obstacles.

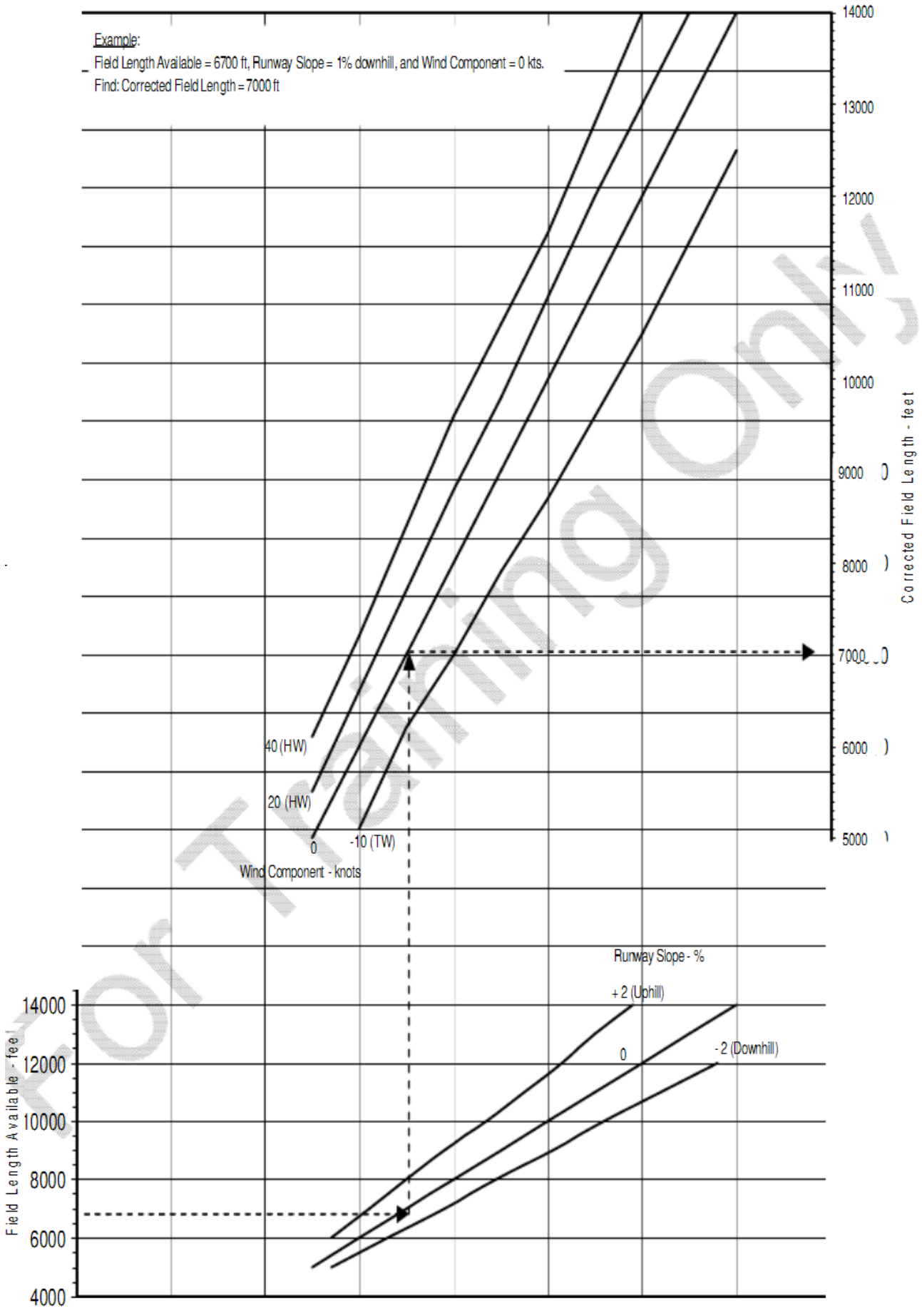
To determine the climb limit weight, enter the chart with OAT, move vertically to airport pressure altitude. Move horizontally and read the climb limit weight to the left. Adjust the climb limit weight according to the notes below the chart to account for the appropriate engine bleed configuration.

Tire Speed Limited Weight

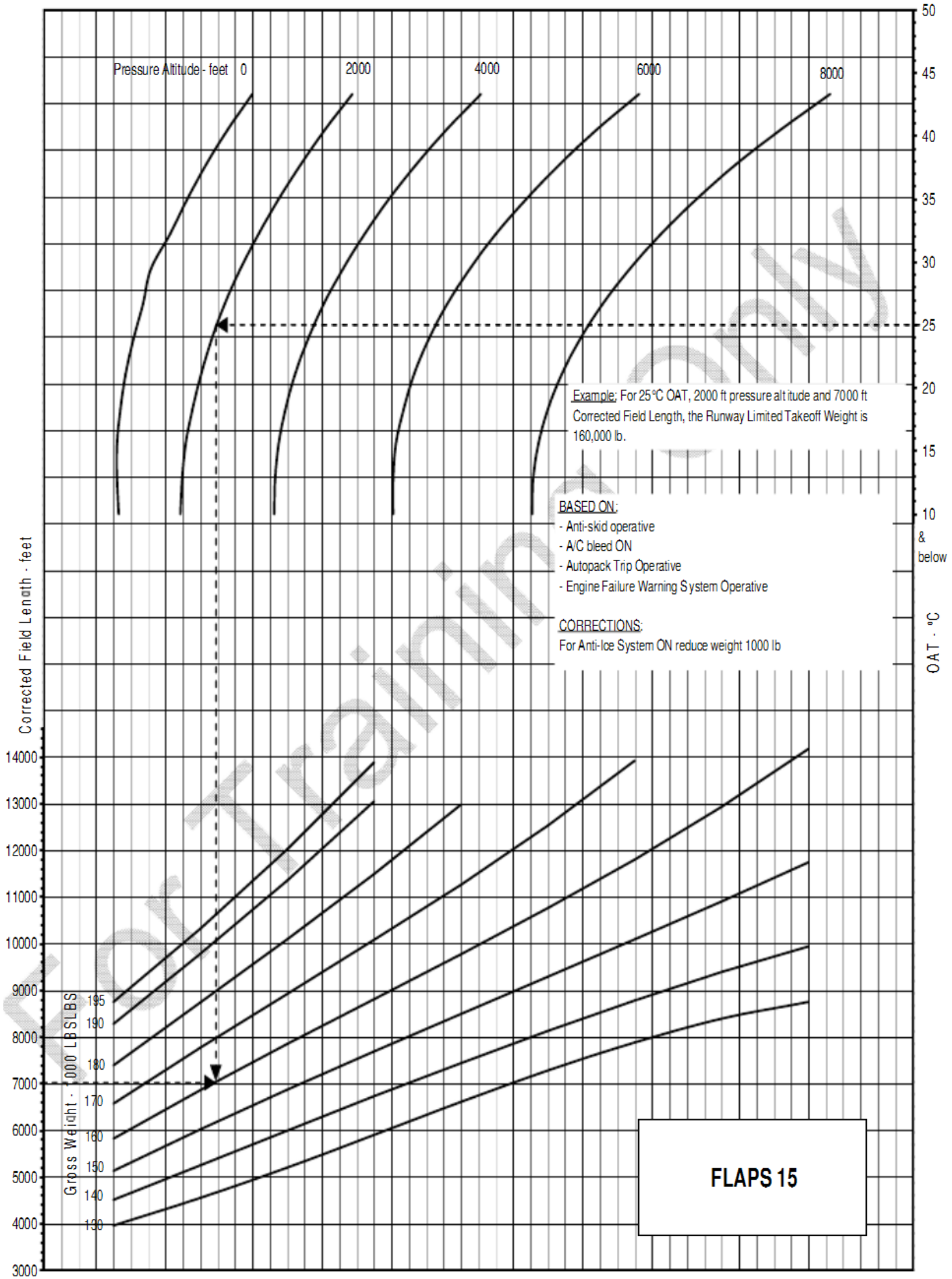
Maximum Tire Speed Limited Weights are presented for one certified takeoff flap setting. The weights are limited by tire speed limit and are based on zero slope and zero wind conditions.

To determine the tire speed limit weight, enter the chart with OAT, move vertically to airport pressure altitude. Move horizontally and read the tire speed limit weight to the left. Adjust the tire speed limit weight according to the notes below the chart to account for wind and different tires.

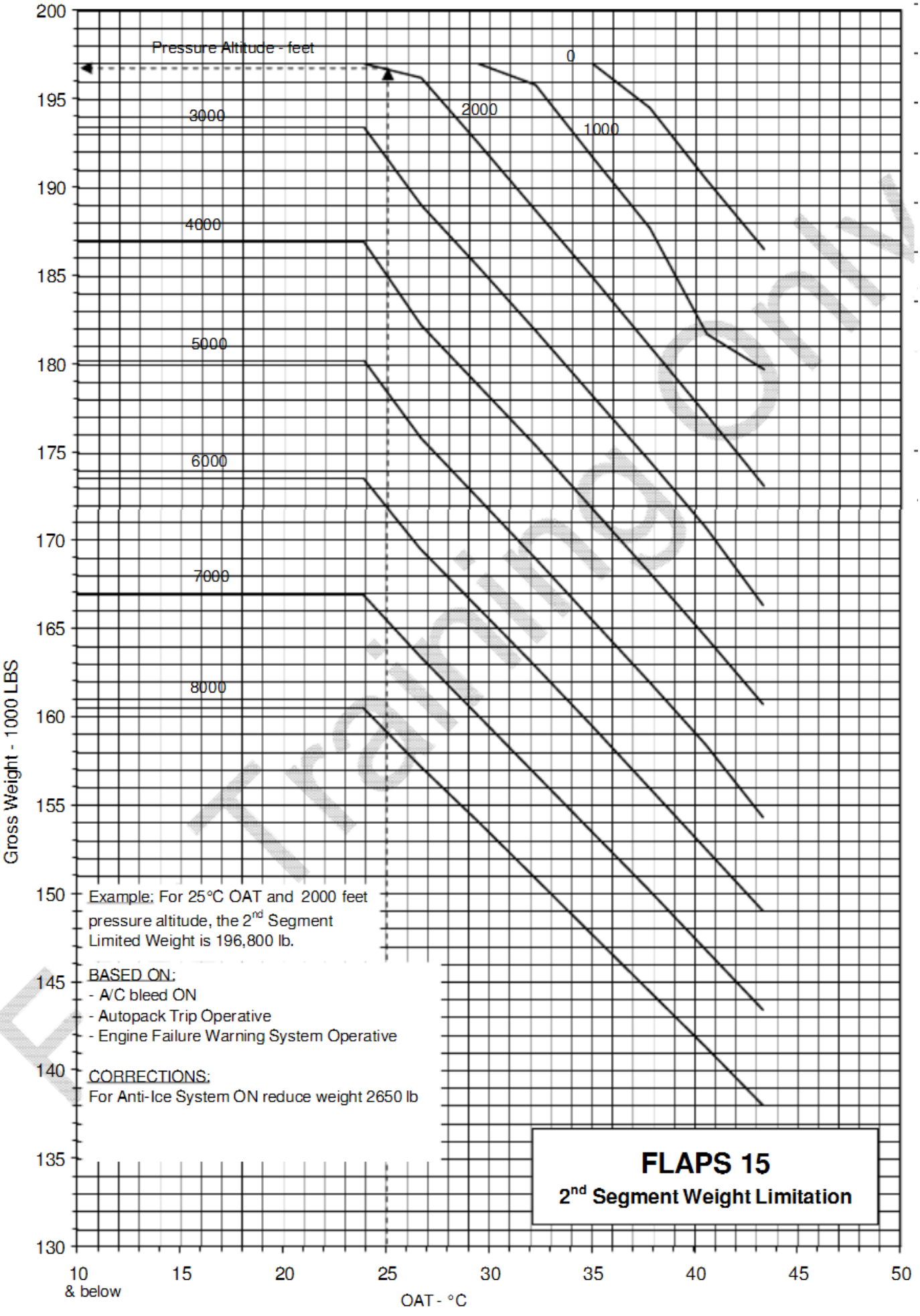
FIELD LENGTH CORRECTION



TAKEOFF FIELD LIMIT FLAPS 15



TAKEOFF CLIMB LIMIT FLAPS 15



Takeoff Speeds

The speeds presented in the Takeoff Speeds table can be used for all performance conditions except where adjustments must be made to V1 for clearway, stopway, brake deactivation, improved climb, contaminated runway situations, unbalanced for brake energy or obstacle clearance with unbalanced V1. These speeds may be used for weights less than or equal to the performance limited weight.

Normal takeoff speeds, V1, VR, and V2, with anti-skid on, are read from the table by entering with takeoff flap setting, brake release weight, and appropriate column.

Press Alt 1000 ft	OAT							
9 to 10	°F			-65 to -14		-13 to 33		34 to 86
	°C			-54 to -26		-25 to 0		1 to 30
7 to 9	°F	- 65 to -36		-35 to 112		13 to 75		76 to 100
	°C	-54 to -38		-37 to -11		-10 to 24		25 to 38
5 to 7	°F	65 to 2		3 to 40		41 to 96		97 to 109
	°C	-54 to -17		-16 to 4		5 to 35		36 to 42
3 to 5	°F	-65 to 32		33 to 88		89 to 112		
	°C	-54 to 0		1 to 31		32 to 44		
1 to 3	°F	-65 to 84		85 to 104		105 to 120		
	°C	-54 to 29		30 to 40		41 to 49		
-1 to 1	°F	-65 to 100		101 to 120				
	°C	-54 to 38		39 to 49				
FLAPS	WEIGHT lb	V1 = VR	V2	V1 = VR	V2	V1 = VR	V2	V1 = VR	V2
5	210000	165	175	167	175				
	200000	159	170	161	170				
	190000	154	166	156	166	158	166		
	180000	148	161	150	161	152	161		
	170000	142	157	144	157	146	156	148	156
	160000	137	151	138	151	140	156	142	150
	150000	131	146	132	146	133	145	136	144
	140000	128	143	129	143	129	142	131	142
	130000	125	141	126	141	127	140	129	140
	120000	119	136	120	135	121	134	122	133
15	210000	155	166	157	166				
	200000	150	161	152	161				
	190000	145	157	147	157	149	157		
	180000	139	152	141	152	143	152		
	170000	134	148	136	148	138	147	140	147
	160000	129	143	130	143	132	143	134	142
	150000	123	138	124	138	126	137	128	137
	140000	121	137	122	136	123	135	125	134
	130000	118	134	119	133	120	132	122	132
	120000	112	128	113	128	114	127	115	126
20	210000	150	161	152	161				
	200000	145	157	147	157				
	190000	140	152	142	152	144	152		
	180000	135	148	137	148	139	148		
	170000	130	144	131	144	133	143	135	143
	160000	125	139	126	139	128	138	130	138
	150000	119	134	120	134	122	133	124	133
	140000	116	131	117	131	118	130	120	130
	130000	114	129	115	129	116	128	118	128
	120000	109	124	109	124	110	123	111	122
25	210000	143	155	146	155				
	200000	141	152	143	152				
	190000	136	148	138	148	139	148		
	180000	130	144	132	144	134	144		
	170000	125	139	127	139	129	139	131	139
	160000	120	135	122	135	124	134	125	134
	150000	115	130	116	130	118	130	120	129
	140000	112	128	113	127	114	127	116	127
	130000	110	126	111	125	112	125	114	125
	120000	105	121	106	120	106	120	107	119

SPEEDS NOT VALID WHEN WEIGHTS ARE PREDICATED ON USE OF CLEARWAY, STOWAY, IMPROVED CLIMB OR ARE LIMITED BY BRAKE ENERGY

Takeoff EPR and N1

TAKEOFF EPR

PRESS ALT	OAT °F / °C		-4 / -20	5 / -15	14 / -10	23 / -5	32 / 0	41 / 5	50 / 10	59 / 15	68 / 20	77 / 25	86 / 30	95 / 35	104 / 40	113 / 45	120 / 49
-1000	1 & 3	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.04	2.03	1.99	1.94	1.91
	2	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.06	2.05	2.00	1.96	1.92
S.L.	1 & 3	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.10	2.08	2.03	1.99	1.94	1.91
	2	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.11	2.10	2.05	2.00	1.96	1.92
1000	1 & 3	2.15	2.15	2.15	2.15	2.15	2.15	2.15	2.13	2.12	2.12	2.11	2.08	2.03	1.99	1.94	1.91
	2	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.15	2.13	2.13	2.12	2.10	2.05	2.00	1.96	1.92
2000	1 & 3	2.21	2.21	2.21	2.21	2.21	2.20	2.17	2.14	2.14	2.14	2.11	2.08	2.03	1.99	1.94	1.91
	2	2.22	2.22	2.22	2.22	2.22	2.21	2.18	2.16	2.16	2.15	2.12	2.10	2.05	2.00	1.96	1.92
3000	1 & 3	2.26	2.26	2.26	2.25	2.23	2.20	2.17	2.14	2.14	2.14	2.11	2.08	2.03	1.99	1.94	1.91
	2	2.28	2.28	2.28	2.27	2.24	2.21	2.18	2.16	2.16	2.15	2.12	2.10	2.05	2.00	1.96	1.92
3856 & ABOVE	1 & 3	2.31	2.29	2.27	2.25	2.23	2.20	2.17	2.14	2.14	2.14	2.11	2.08	2.03	1.99	1.94	1.91
	2	2.32	2.31	2.29	2.27	2.24	2.21	2.18	2.16	2.16	2.15	2.12	2.10	2.05	2.00	1.96	1.92

EPR BLEED CORRECTIONS	ENG 1 & 3	ENG 2
AIR CONDITIONING	OFF +.04	-
ENGINE A/I ON	ZERO	-0.3
IN SHADED AREA COLDER THAN 0°F (-18°C)	-0.3	-0.6
MOD 'A' INLET	-	0.1

STABILZER TRIM SETTING

CG %	FLAPS 5	FLAPS 15 / 20	FLAPS 25
	UNITS AIRPLANE NOSE UP		
10	6 3/4	7 1/2	8 1/4
12	6 1/2	7 1/4	8
14	6 1/4	7	7 3/4
16	6	6 3/4	7 1/2
18	5 3/4	6 1/2	7
20	5 1/2	6	6 1/2
22	5	5 3/4	6 1/4
24	4 3/4	5 1/4	5 3/4
26	4 1/2	4 3/4	5 1/4
28	4	4 1/2	4 3/4
30	3 3/4	4	4 1/4
32	3 1/2	3 3/4	4
34	3 1/4	3 1/4	3 1/2
36	2 3/4	3	3
38	2 1/2	2 1/2	2 1/2
40	2 1/2	2 1/2	2 1/2
42	2 1/2	2 1/2	2 1/2

TAKEOFF N1

PRESS ALT	OAT - °C																				
	-40	-35	-29	-23	-18	-12	-7	-1	4	10	16	18	21	24	27	29	32	35	38	41	43	49
-1000	82.2	83.2	84.2	85.1	86.1	87.0	87.9	88.8	89.7	90.6	91.5	92.0	92.4	92.8	93.2	93.7	94.1	94.2	93.7	93.3	92.9	92.0
S.L.	83.5	84.5	85.5	86.5	87.4	88.3	89.3	90.2	91.1	92.0	93.0	93.4	93.9	94.3	94.7	95.0	94.6	94.2	93.7	93.3	92.9	92.0
1000	85.4	86.4	87.3	88.3	89.2	90.2	91.1	92.0	92.9	93.3	93.0	93.4	93.9	94.3	94.7	95.0	94.6	94.2	93.7	93.3	92.9	92.0
2000	68.8	87.8	88.9	89.9	90.9	91.9	92.8	93.8	93.6	93.3	93.0	93.4	93.9	94.3	94.7	95.0	94.6	94.2	93.7	93.3	92.9	92.0
3000	88.4	89.5	90.5	91.5	92.5	93.5	94.0	93.8	93.6	93.3	93.0	93.4	93.9	94.3	94.7	95.0	94.6	94.2	93.7	93.3	92.9	92.0
4000	90.1	91.2	92.3	93.3	94.0	94.0	94.0	93.8	93.6	93.3	93.0	93.4	93.9	94.3	94.7	95.0	94.6	94.2	93.7	93.3	92.9	92.0
5000	92.0	93.1	93.7	93.9	94.0	94.0	94.0	93.8	93.6	93.3	93.0	93.4	93.9	94.3	94.7	95.0	94.6	94.2	93.7	93.3	92.9	92.0
5660	93.2	93.5	93.7	93.9	94.0	94.0	94.0	93.8	93.6	93.3	93.0	93.4	93.9	94.3	94.7	95.0	94.6	94.2	93.7	93.3	92.9	92.0

ADJUSTMENTS:

ENGINE ANTI-ICE ON -No. 1&3 + 0.7% - No. 2 + 0.2%

Distance, Time and Fuel

Distance, time, and fuel for climb are shown for a 250/300/.78M climb speed schedule. Enter the table with top of climb flight level and read distance, time, and fuel required.

Based on: 250 / 300 / M.78 Climb

Economic Climb Speeds

Economic climb speeds are presented as a function of gross weight.

Gross Weight lb	Speed knots IAS
120000	280
130000	285
140000	290
150000	295
160000	300
170000	305
180000	310
190000	315
200000	320
210000	325

FL	Distance NM	Time min	Fuel lbs
90	33	7	2646
110	54	8	3086
130	63	9	3417
150	72	10	3858
170	89	12	4299
190	99	13	4519
210	110	14	4960
230	126	16	5512
250	141	18	5952
270	155	20	6393
290	169	22	6834
310	191	25	7496
330	227	30	8488
350	263	35	9149
370	238	32	7937
390	224	30	7385

DESCENT

Distance and time for descent are shown for a .78M/280 KIAS descent speed schedule. Enter the table with top of descent pressure altitude and read distance in nautical miles and time in minutes.

.78M / 280 knot descent

Based on:

- Idle power on all engines throughout descent down to initial approach configuration
- Cruise Mach 0.78 to to crossover then 350 knots to 10000 feet
- 250 knots or less below 10000 feet
- Clean configuraton above 2000 feet
- Add 120 pounds fuel burn for each minute of terminal area maneuvering

Press. Altitude feet	Distance NM	Time min	Fuel lbs
41000	133	23.6	1711
39000	127	22.8	1684
37000	121	22.1	1654
35000	115	21.3	1622
33000	109	20.6	1588
31000	104	19.9	1552
29000	98	19.2	1513
27000	93	18.6	1474
25000	88	18.0	1436
23000	83	17.4	1399
21000	78	16.7	1355
19000	72	16.0	1308
17000	66	15.2	1259
15000	60	14.4	1210
13000	54	13.7	1162
11000	49	12.9	1112
9000	36	10.6	1019
7000	30	9.4	974
5000	25	8.2	924
3000	18	6.5	848

LANDING PERFORMANCE

Charts are provided for determining the maximum landing weight as limited by field length or climb requirements for flap positions 30 and 40. Maximum performance landing weight is the smaller of the field length limit weight and climb limit weight; do not exceed maximum structural landing weight.

Normally the flap setting for landing is 30 degrees. A flap 30 landing is required when the airport elevation is above 2000 ft.

The use of flap 40 is recommended when landing under adverse conditions such as:

- Slippery Runway
- Runway Length 7000 ft or less
- Braking action reported less then good

Landing Field Length Limitation

To determine the landing field length rquired enter the chart with gross weight and airport pressure altitude and read field length required.

Charts are provided for DRY and WET runway conditions.

Landing Climb Limitation

Enter table with OAT and airport pressure altitude and read climb limited gross weight.

Landing Speeds

Flaps 30

Weight lb	Vref kn
160000	137
155000	135
150000	132
145000	130
140000	128
135000	126
130000	123
125000	121
120000	118
115000	116
110000	113
105000	111

Flaps 40

Weight lb	Vref kn
145000	126
140000	123
135000	121
130000	119
125000	117
120000	114
115000	112
110000	109
105000	107
100000	104