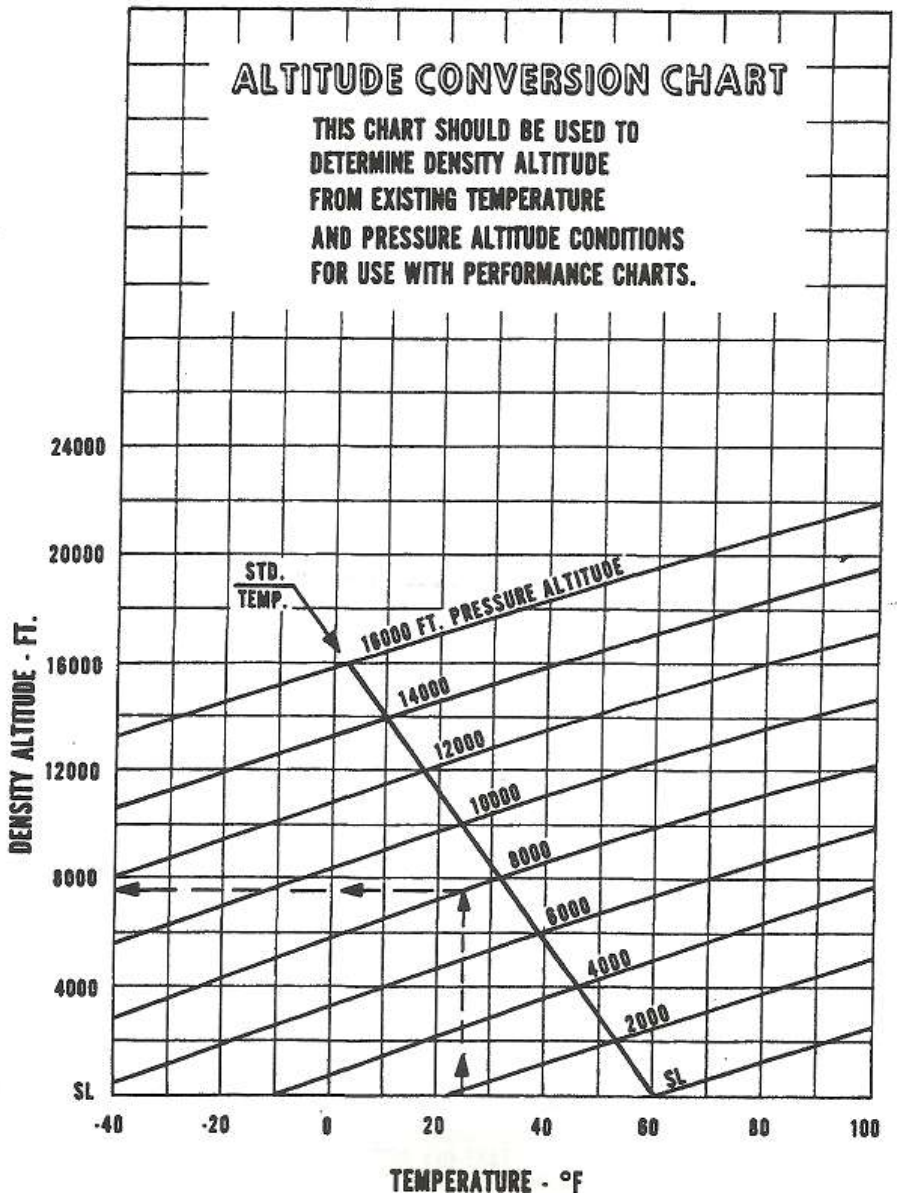
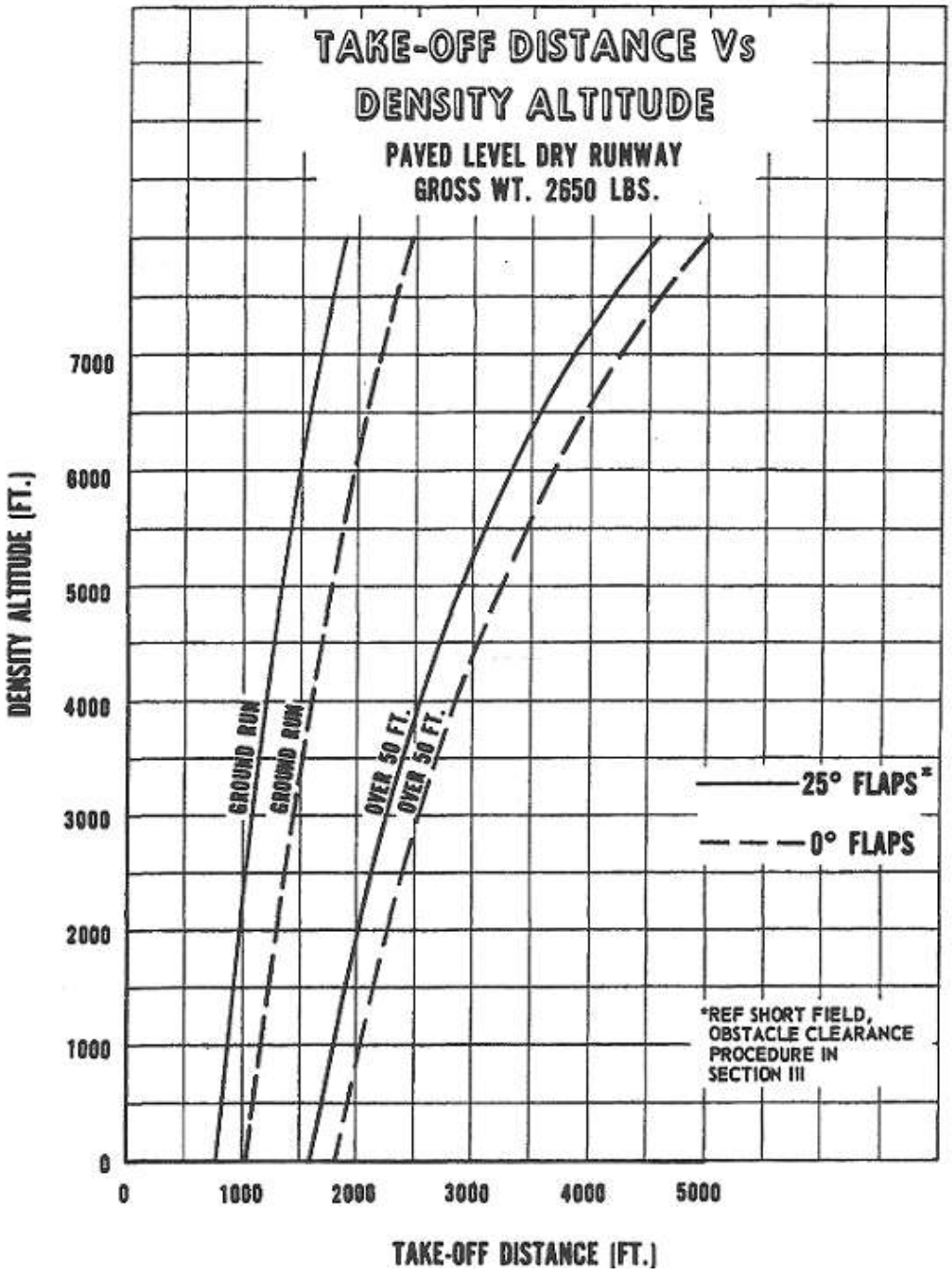
	Weight	Arm Aft Datum	Moment
	(Lbs)	(Inches)	(In-Lbs)
Basic Empty Weight	?	?	?
Pilot and Front Passenger	420	?	33810.00
Passenger rear Seat	340	?	40154.00
Fuel (102 Gallons Max)	150	?	14100.00
Baggage Forward	180	?	25704.00

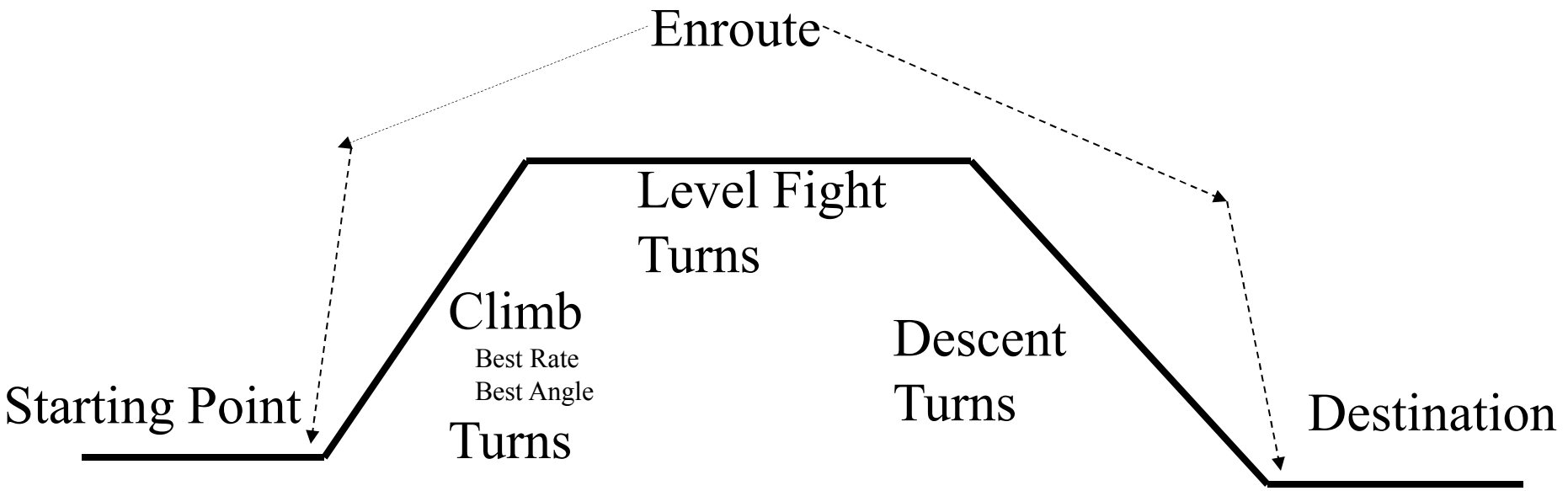
Table 6.1

Surface	μ_r(Typical Values)	
	Brakes off	Brakes on
Dry concrete/asphalt	0.03–0.05	0.3–0.5
Wet concrete/asphalt	0.05	0.15–0.3
Icy concrete/asphalt	0.02	0.06–0.10
Hard turf	0.05	0.4
Firm dirt	0.04	0.3
Soft turf	0.07	0.2
Wet grass	0.08	0.2




TAKE-OFF DISTANCE Vs
DENSITY ALTITUDE
PAVED LEVEL DRY RUNWAY
GROSS WT. 2650 LBS.
DENSITY ALTITUDE (FT.)
7000
6000
5000
4000
3000
2000
1000
0
GROUND RUN
GROUND RUN
OVER 50 FT.
OVER 50 FT.
25° FLAPS*
0° FLAPS
*REF SHORT FIELD, OBSTACLE CLEARANCE PROCEDURE IN SECTION III
0
1000
2000
3000
4000
5000
TAKE-OFF DISTANCE (FT.)

Course Progression



Flight Planning
Weight and Balance
Pre-Flight
Take-Off Roll

Ground Effect
Landing Roll

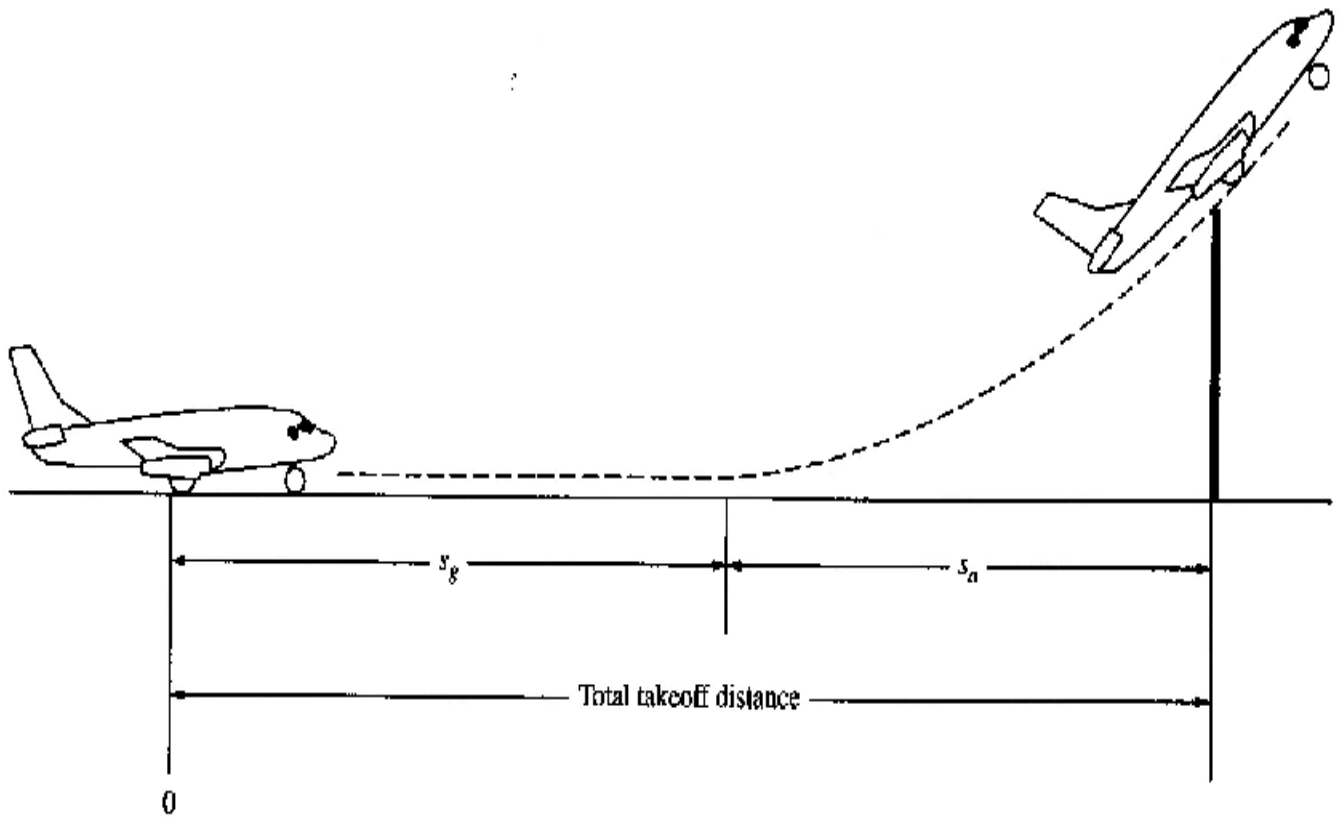
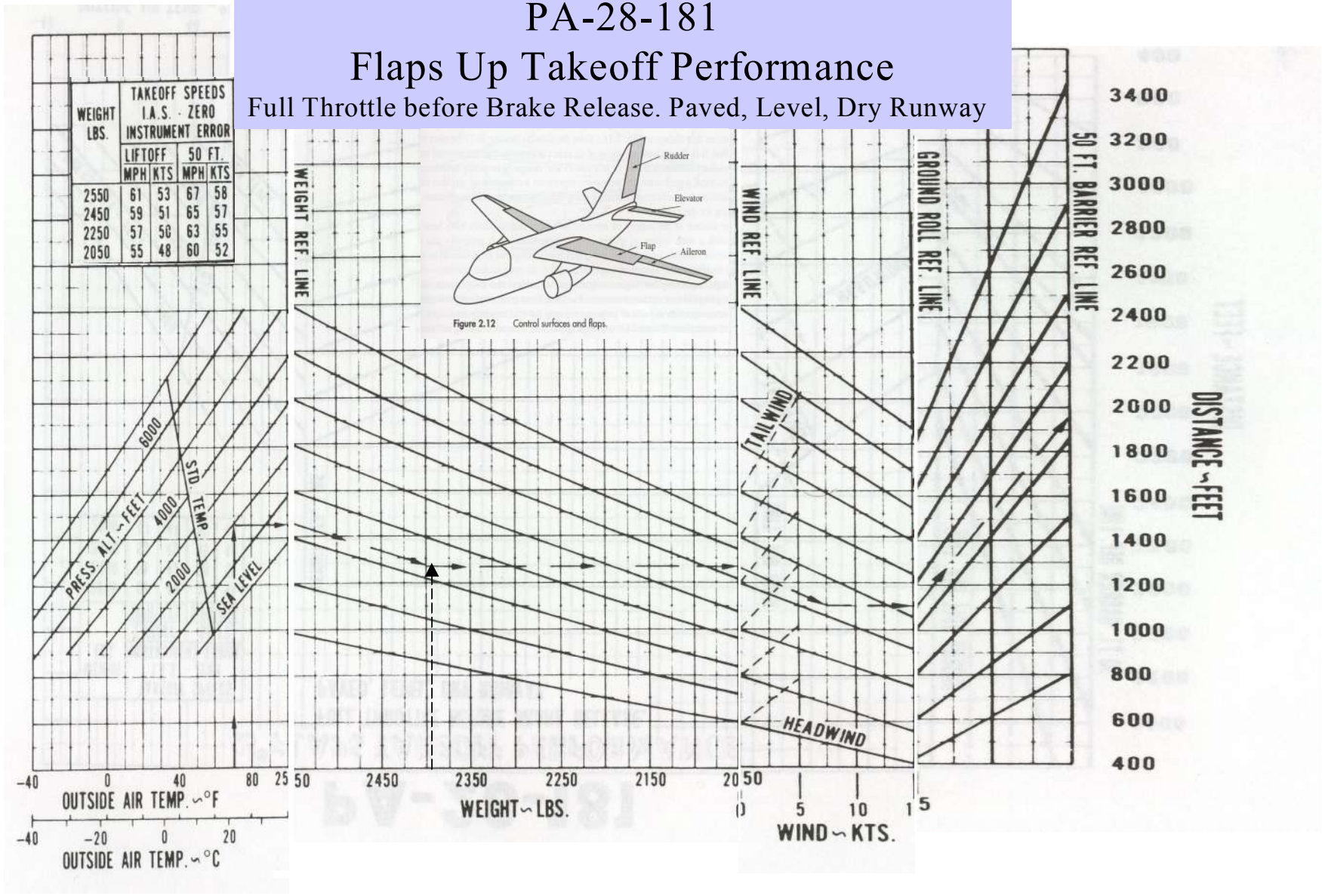
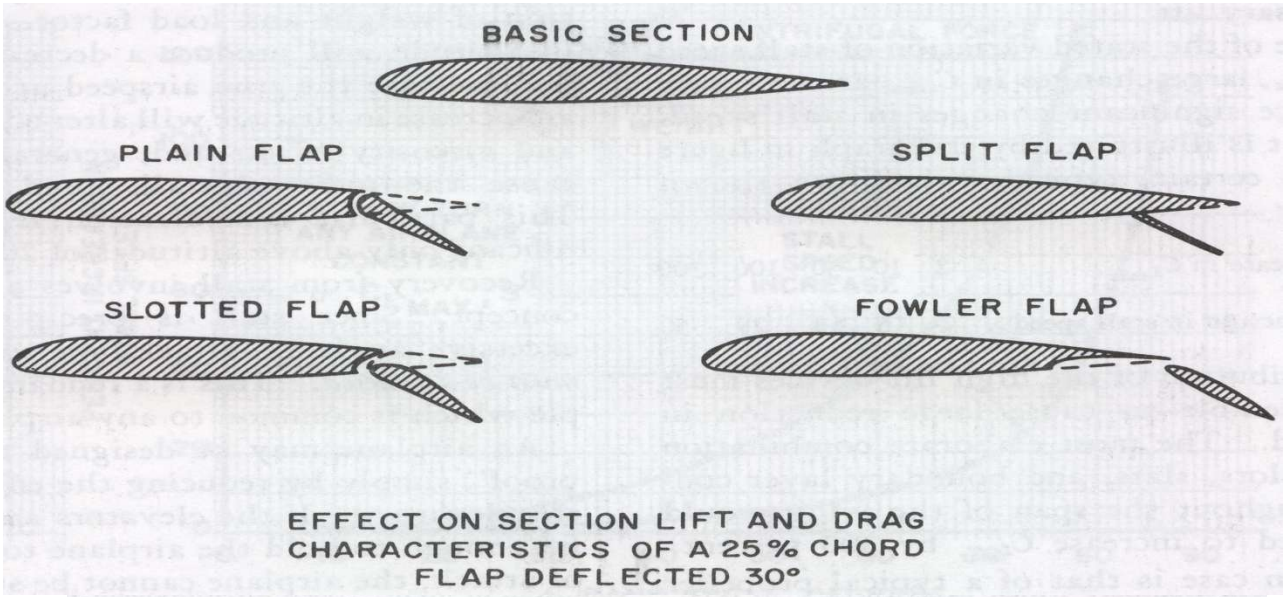


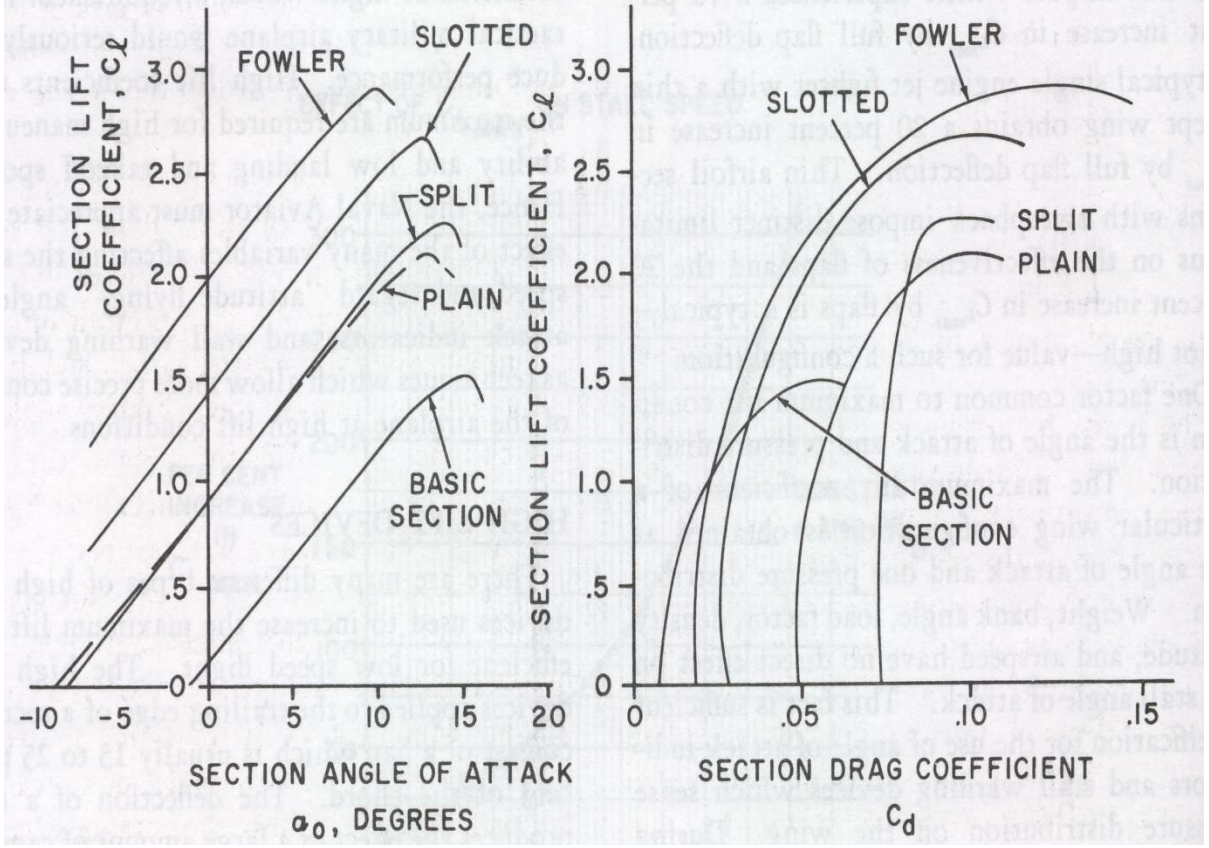
Figure 6.12 Illustration of ground roll s_g, airborne distance s_a, and total takeoff distance.

PA-28-181
Flaps Up Takeoff Performance
Full Throttle before Brake Release. Paved, Level, Dry Runway





EFFECT ON SECTION LIFT AND DRAG CHARACTERISTICS OF A 25% CHORD FLAP DEFLECTED 30°



PA-28-181

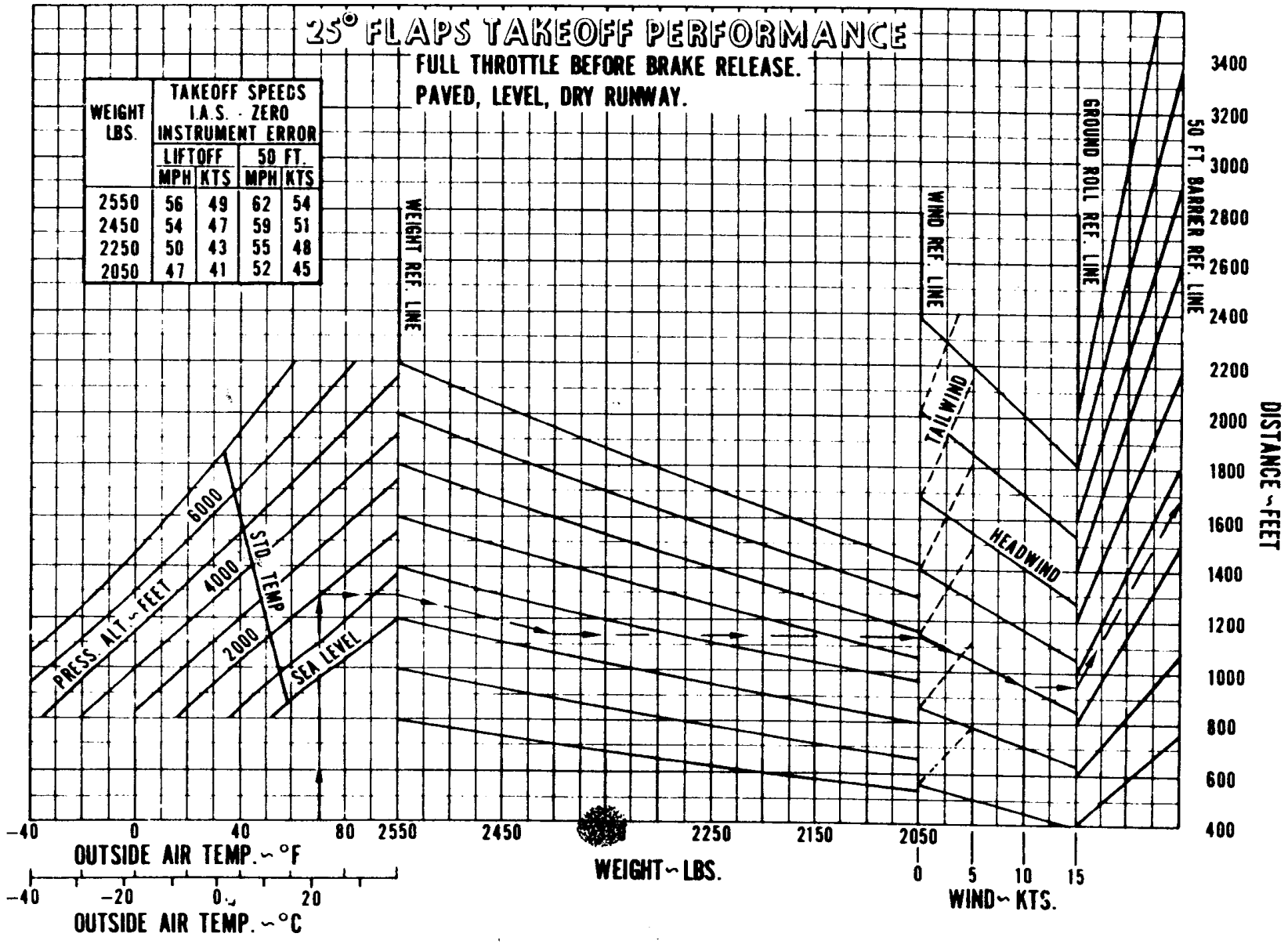


Figure 5-7

25° FLAPS TAKEOFF PERFORMANCE

Climb Performance

There are three types of climb that you may use at the start of a cross-country flight:

1. The **maximum angle climb** at speed V_X allows you to gain the maximum altitude in the shortest *distance*. It is normally used only immediately after the takeoff to provide a steep climb-out gradient over any obstacles, after which the airplane nose is lowered slightly and the airspeed allowed to increase to normal climb speed. Since this type of climb is only of short duration, no performance tables (in terms of fuel flow and distance covered) are provided.
2. The **maximum rate of climb** at speed V_Y allows you to gain the maximum altitude in the shortest *time*. This climb speed is used when you want to reach cruise altitude as quickly as possible. Performance charts or tables, such as that shown Figure 11-5, are provided, since this type of climb may be prolonged and used all the way up to cruise altitude. The important figures from a flight planning point of view are the time, fuel and distance to top of climb. A wind will not affect the time, fuel and air distance to reach the required altitude, but it will affect the *ground* distance covered.
3. The **normal climb** at the specified climb speed is somewhat faster than the maximum rate climb speed, and is sometimes called a *cruise* climb. Performance tables or charts are provided.

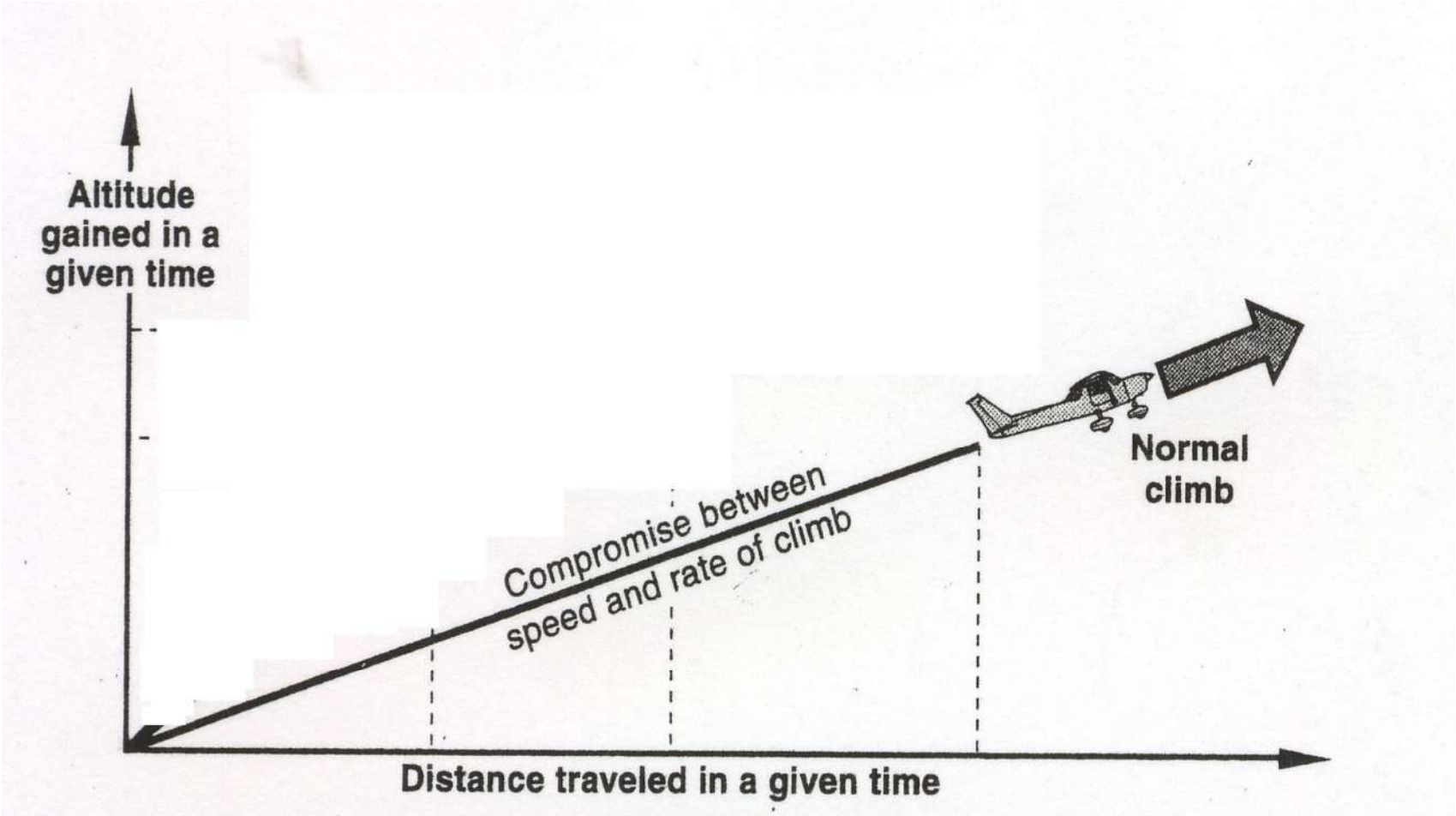


Figure 11-4. The different types of climb

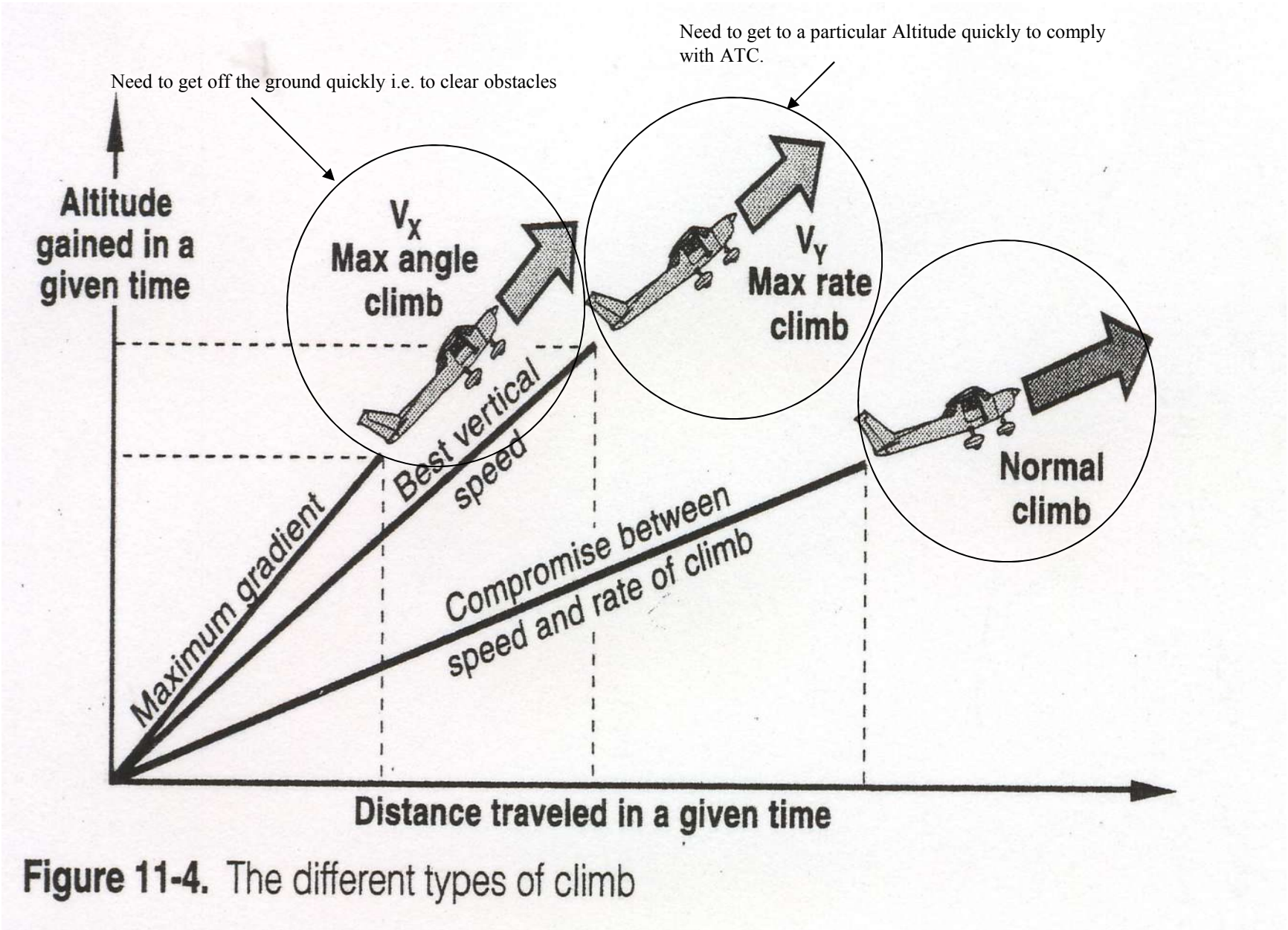


Figure 11-4. The different types of climb

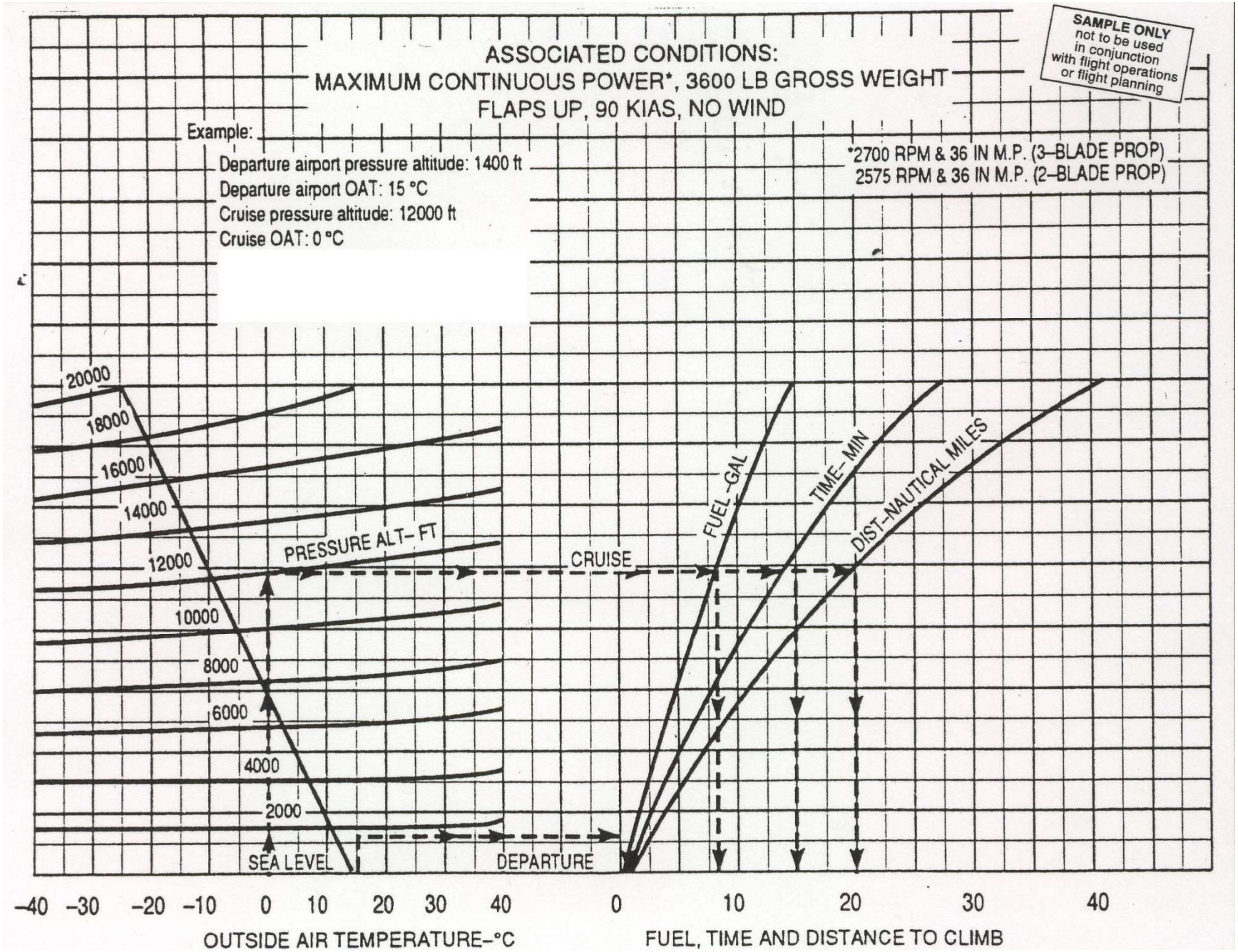
MAXIMUM RATE OF CLIMB

WEIGHT LBS	PRESS ALT FT	RATE OF CLIMB FPM	FROM SEA LEVEL		
			TIME MIN	FUEL USED POUNDS	DISTANCE NM
4000	S.L.	605	0	0	0
	4000	570	7	14	13
	8000	530	14	28	27
	12,000	485	22	44	43
	16,000	430	31	62	63
	20,000	365	41	82	87
3700	S.L.	700	0	0	0
	4000	665	6	12	11
	8000	625	12	24	23
	12,000	580	19	37	37
	16,000	525	26	52	53
	20,000	460	34	68	72
3400	S.L.	810	0	0	0
	4000	775	5	10	9
	8000	735	10	21	20
	12,000	690	16	32	31
	16,000	635	22	44	45
	20,000	565	29	57	61

CONDITIONS:
Flaps Up
Gear Up
2600 RPM
Cowl Flaps Open
Standard Temperature

NOTES:

1. Add 16 pounds of fuel for engine start, taxi and takeoff allowance.
2. Increase time, fuel and distance by 10% for each 10°C above standard temperature.
3. Distances shown are based on zero wind.


SAMPLE ONLY
not to be used
in conjunction
with flight operations
or flight planning
ASSOCIATED CONDITIONS:
MAXIMUM CONTINUOUS POWER*, 3600 LB GROSS WEIGHT
FLAPS UP, 90 KIAS, NO WIND
Example:
Departure airport pressure altitude: 1400 ft
Departure airport OAT: 15 °C
Cruise pressure altitude: 12000 ft
Cruise OAT: 0 °C
*2700 RPM & 36 IN M.P. (3–BLADE PROP)
2575 RPM & 36 IN M.P. (2–BLADE PROP)
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
SEA LEVEL
PRESSURE ALT– FT
CRUISE
DEPARTURE
FUEL–GAL
TIME–MIN
DIST–NAUTICAL MILES
–40 –30 –20 –10 0 10 20 30 40
0 10 20 30 40
OUTSIDE AIR TEMPERATURE–°C
FUEL, TIME AND DISTANCE TO CLIMB

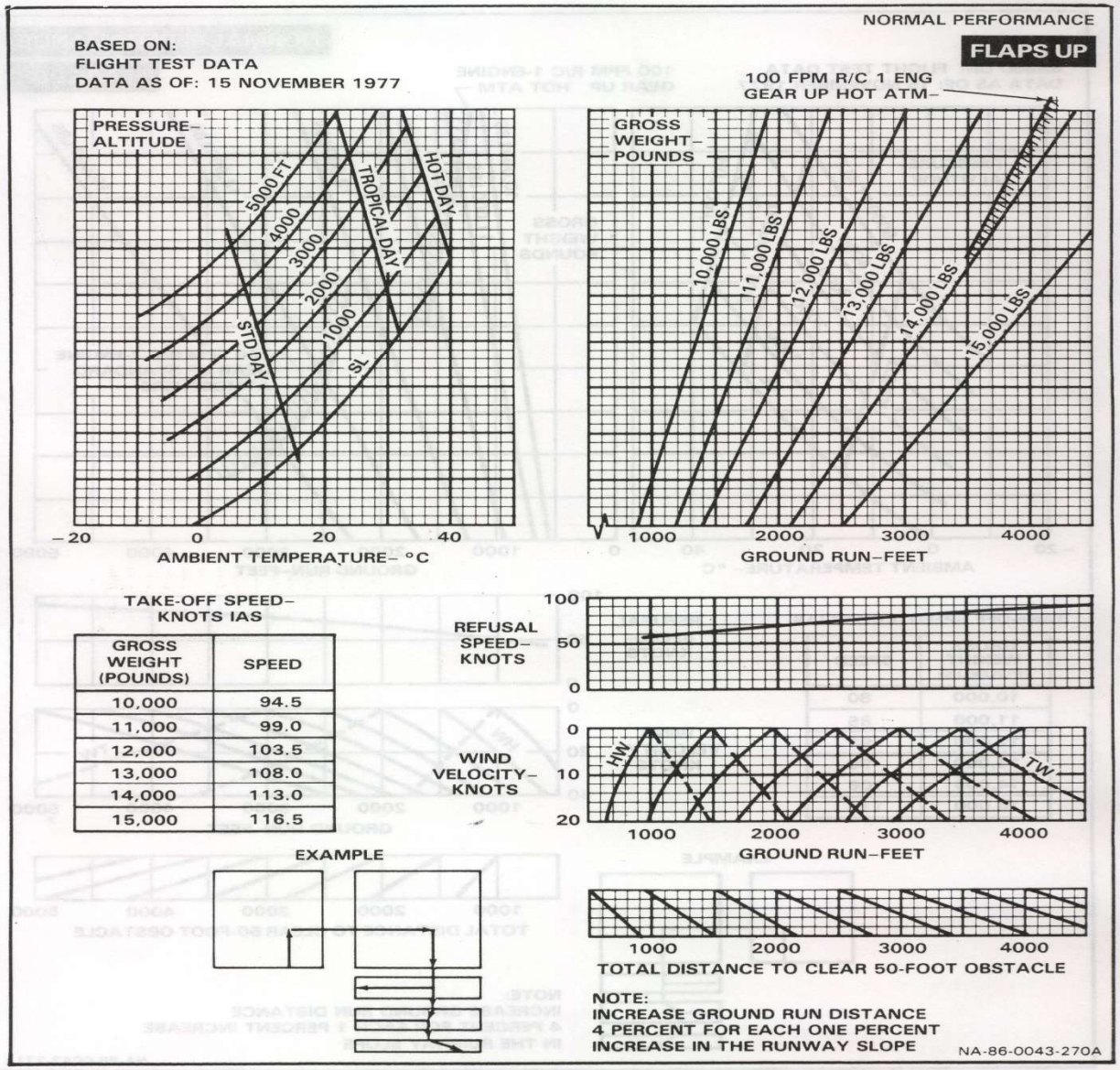


Figure 26-5. Take-Off Distance, Normal Performance (Flaps Up)

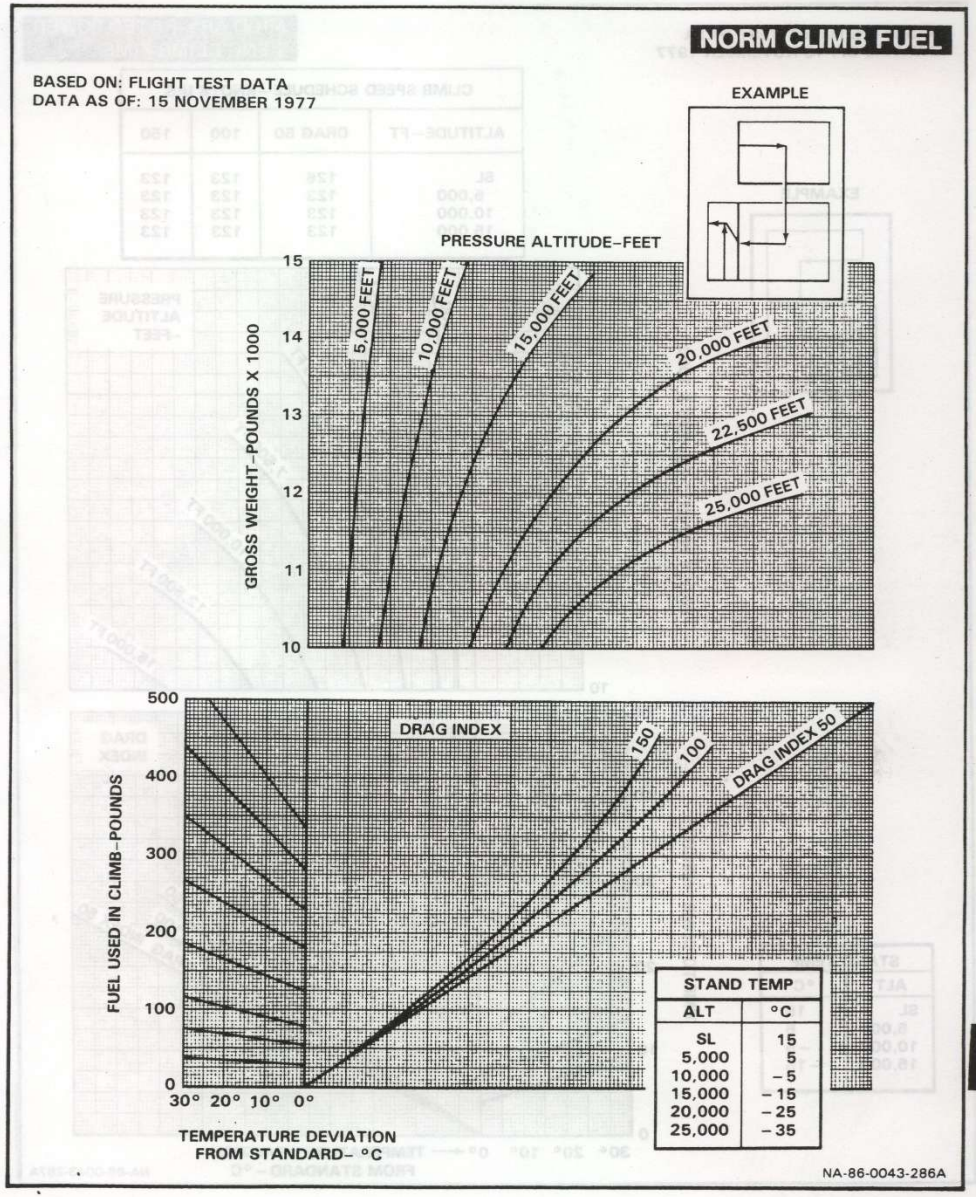


Figure 27-2. Normal Power Climb, Fuel (Sheet 3 of 3)

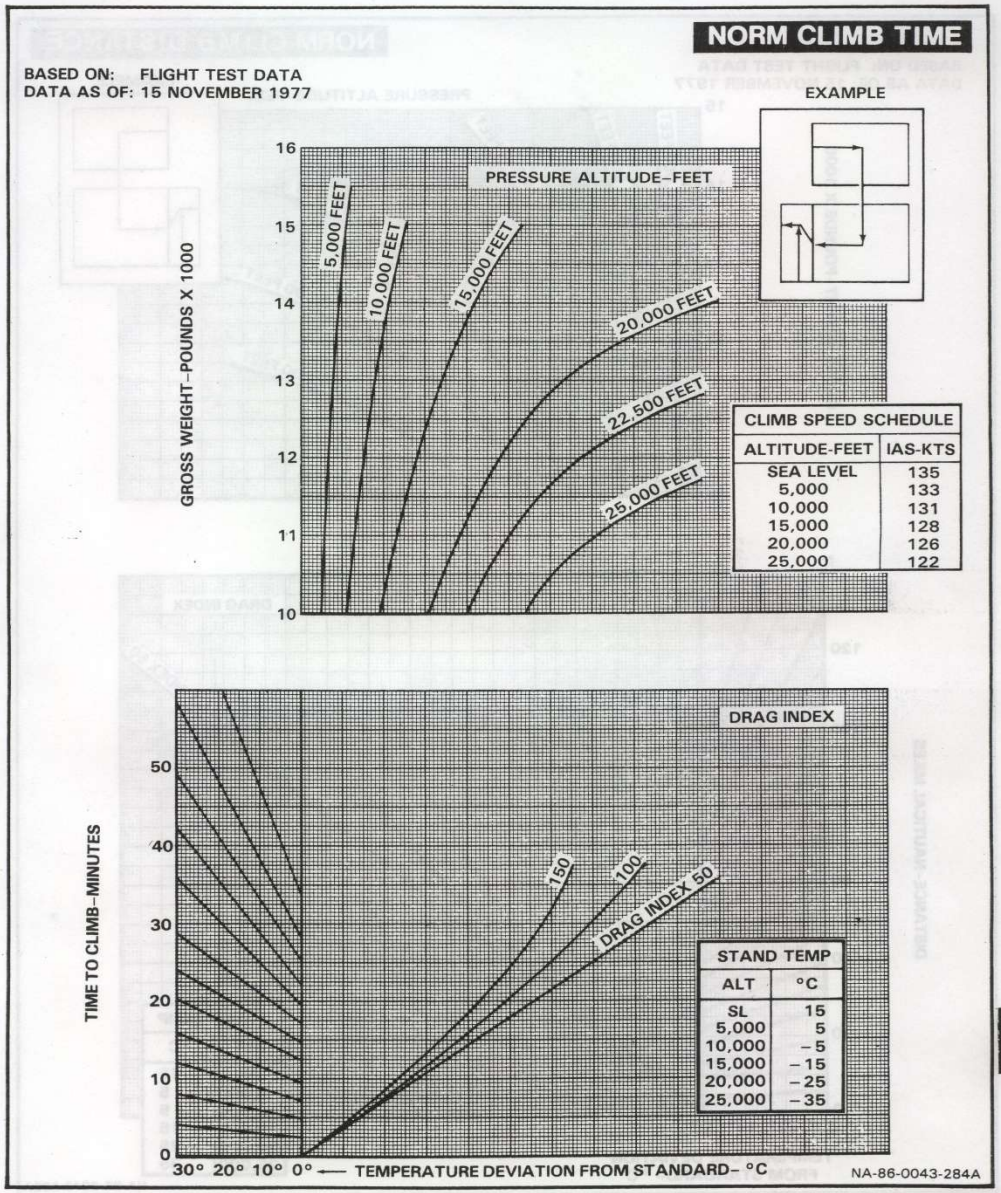


Figure 27-2. Normal Power Climb, Time (Sheet 1 of 3)

STOL PERFORMANCE

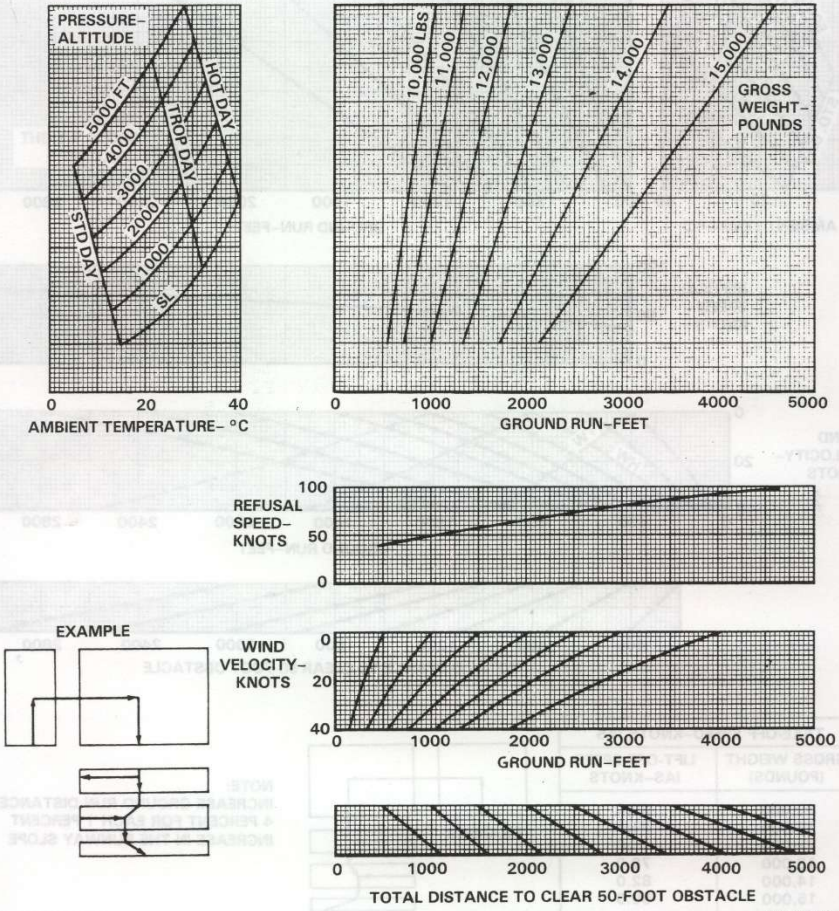
FLAPS 20°

BASED ON: FLIGHT TEST DATA
DATA AS OF: 15 NOVEMBER 1977

NOTE:
INCREASE GROUND RUN DISTANCE
4 PERCENT FOR EACH ONE PERCENT INCREASE
IN THE RUNWAY SLOPE

TAKE-OFF SPEED–
KNOTS IAS

GROSS WEIGHT (LBS)	SPEED (IAS)
10,000	76
11,000	82
12,000	88
13,000	94
14,000	100
15,000	106



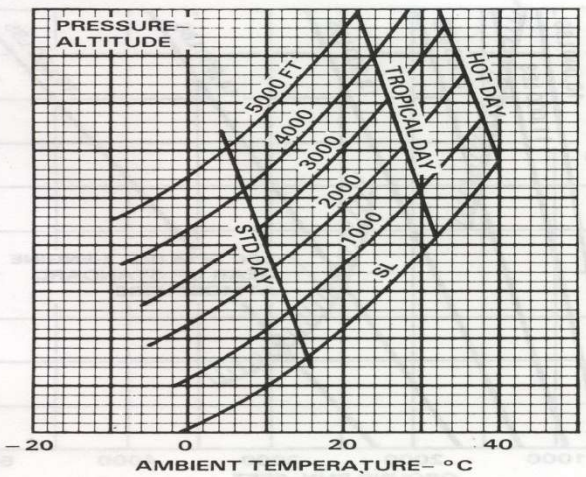
NA-86-0043-272A

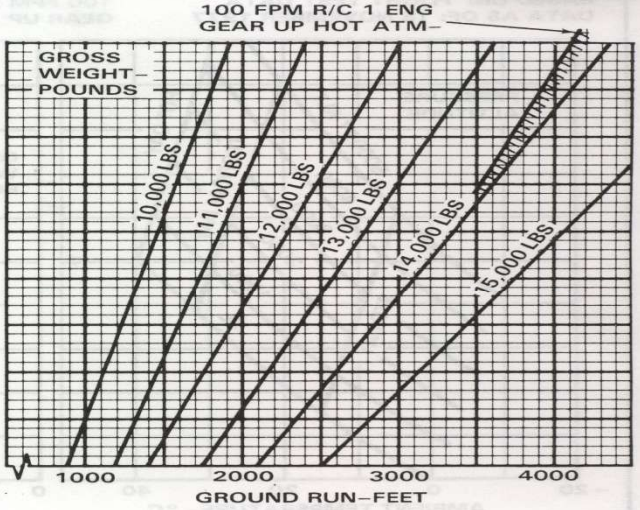
Figure 26-7. Take-Off Distance, STOL Performance (Flaps 20°)

NORMAL PERFORMANCE

FLAPS UP

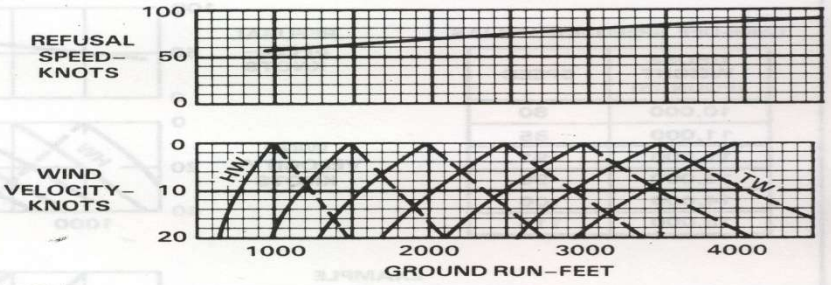
BASED ON:
FLIGHT TEST DATA
DATA AS OF: 15 NOVEMBER 1977



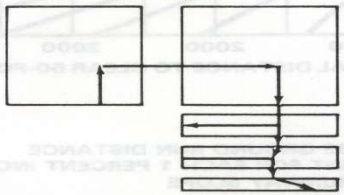


TAKE-OFF SPEED–
KNOTS IAS

GROSS WEIGHT (POUNDS)	SPEED
10,000	94.5
11,000	99.0
12,000	103.5
13,000	108.0
14,000	113.0
15,000	116.5



EXAMPLE



NOTE:
INCREASE GROUND RUN DISTANCE
4 PERCENT FOR EACH ONE PERCENT
INCREASE IN THE RUNWAY SLOPE

NA-86-0043-270A

Figure 26-5. Take-Off Distance, Normal Performance (Flaps Up)

BURLINGTON, NORTH CAROLINA

AL-5694 (FAA)

GPS RWY 24

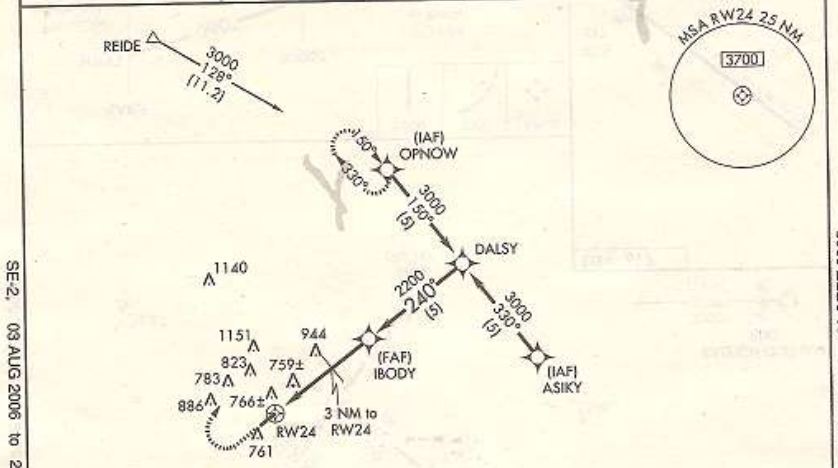
BURLINGTON-ALAMANCE REGIONAL (BUY)

APP CRS	Rwy Idg	5000
240°	TDZE	609
	Apt Elev	617

NA

MISSED APPROACH: Climb to 1600 then climbing right turn to 3000 direct OPNOW WP and hold.

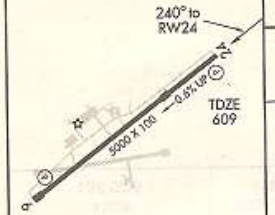
ASOS	GREENSBORO APP CON	CLNC DEL	UNICOM
135.325	118.5 327.075	120.25	122.975(CTAF)



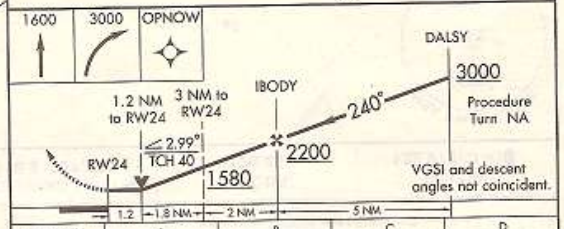
SE-2, 03 AUG 2006 to 28 SEPT 2006

SE-2, 03 AUG 2006 to 28 SEPT 2006

ELEV 617



MIRL Rwy 6-24
REIL Rwys 6 and 24



CATEGORY	A	B	C	D
S-24	1020-1 411 (500-1)		1020-1¼ 411 (500-1¼)	
CIRCLING	1080-1 463 (500-1)		1100-1½ 483 (500-1½)	1300-2¼ 683 (700-2¼)

BURLINGTON, NORTH CAROLINA

BURLINGTON-ALAMANCE REGIONAL (BUY)

Amdt 1A 060

16° 03'N-79° 28'W

GPS R[illegible] 24

AIRPORT DIAGRAM

GREENSBORO/ PIEDMONT TRIAD INTL (GSO)
GREENSBORO, NORTH CAROLINA

AL-178 (FAA)