PREPARED	PIPER AIRCRAFT CORP.	REPORT VB-575
CHECKED	DEVELOPMENT CENTER, VERO BEACH, FLA.	MODEL PA-28-151
APPROVED		PAGE TITLE

DUPLICATE

APPROVED AEROPLANE FLIGHT MANUAL

FOR THE PIPER MODEL

PA-28-151

PREPARED IN ACCORDANCE WITH BRITISH
CIVIL AIRWORTHINESS REQUIREMENTS

Rev. No. 4

SERIAL NUMBER: 28-7415001 TO 28-7615999

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DOA SO-1 APPROVED

FAA DOA
APPROVAL BY: D. H. Trompler
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FAA/DOA COORDINATOR

DUPLICATE

SECTION I. GENERAL

A. Registration Particulars

1. Airplane designation: PIPER Model PA-28-151

2. Registration Marks: _____

3. Constructor's Serial Number: 28-7515204

4. Designed and Constructed by: Piper Aircraft Corporation
Vero Beach, Florida, U.S.A.
32960

5. F.A.A. Certificate of Airworthiness for Export:
Number: _____
Date of Issue: _____

6. Model PA-28-151 British Flight Manual, Piper Aircraft Corporation Report VB-575, Approved by the Secretary, Civil Aviation Authority on: _____.

7. This airplane shall be operated in accordance with the limitations in Section II and any additional limitations in the Supplements contained in Section VI.

SECTION I. GENERAL (continued)

B. Table of Contents

SECTION I. GENERAL (continued)

ORIGINAL

SECTION I. GENERAL (continued)

ORIGINAL

SECTION I. GENERAL (continued)

PAGE

LIST OF ILLUSTRATIONS

SECTION I. GENERAL, (continued)

C. Amendment System

The current amendment state of this manual is noted on the amendment record sheet (Page 7). Amendments to the text are indicated by a vertical line in the margin together with the revision number. The revision number and the revision date are given in the margin of the revised page. This revision number supersedes the original issue and all previous revisions and contains the latest approved information pertinent to the airplane.

Amendments to supplements published by another organization other than Piper Aircraft Corporation, and included in this manual without the consent of Piper Aircraft Corporation, are the responsibility of that organization. These amendments will not necessarily be reflected on the amendment record sheet of Page 80 of Section VI.

A record of approved supplements and their embodiment into the manual is provided for on Page 80 of Section VI.

UNITED STATES F.A.A.
AMENDMENT RECORD SHEET

REVISION NO.	DATE OF REVISION. DAY	MO.	YR.	REVISED BY	APPROVAL DATE (CAA) DAY	MO.	YR.	REVISION TITLE	PAGES AFFECTED
1	25	3	74	R.K.	15	5	74	Deleted Reference to Aerobatic Manoeuvres	22 & 23
								Qualified Battery Capacity	36
								Deleted Propeller Check	45
								Changed Example & Climb Speed at Light Weight Redrawn	70 72
				DOA SO-1 APPROVED					
2	15	10	74	R.K.	27	11	74	Deleted Reference to Aerobatic Manoeuvres	14, 15, 16 & 20
				Ward Evans				Specified Battery Capacity	36
				FAA DOA SO-1 APPROVED				Corrected T.O. Distance Charts	63, 66 61, 64
3	1	8	75	L.M.	27	10	75	Add new wing-flaps extended speed and serial number effectivity.	19, 20, 21, 26, 49
				Ward Evans					
				FAA DOA SO-1 APPROVED					
4	11	5	76	RM	10	8	77	Revised Applicability up to Serial No. 28-7615999	Title & 7
				Ward Evans					
				FAA DOA SO-1 APPROVED					

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	REPORT VB-575 MODEL PA-28-151
CHECKED		
APPROVED		PAGE 8

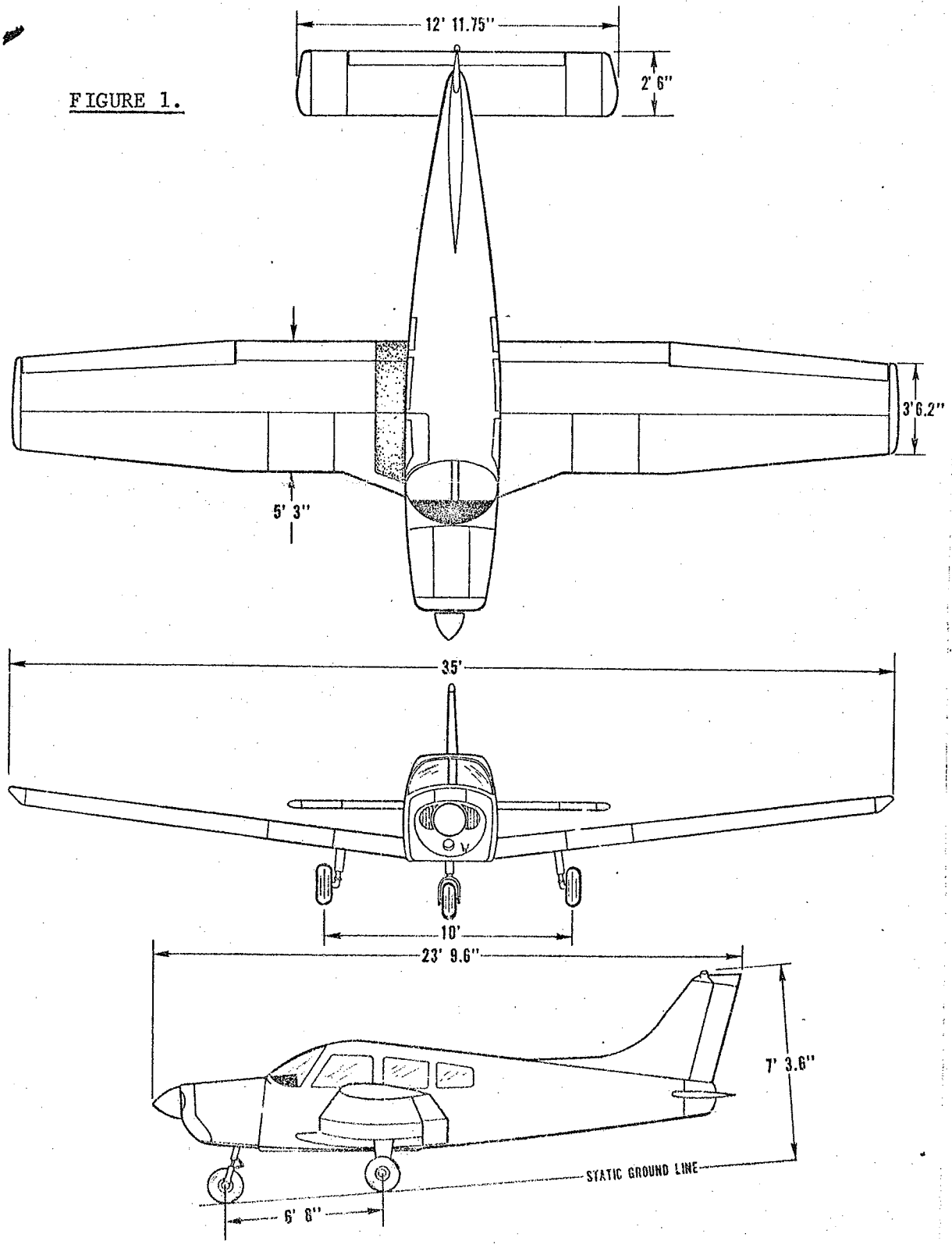
C.A.A. AMENDMENT RECORD SHEET

REVISION NO.	DATE OF REVISION			REVISED BY	APPROVAL DATE (CAA)			REVISION TITLE	PAGES AFFECTED.
	DAY	MO.	YR.		DAY	MO.	YR.		

SECTION I. GENERAL, (continued)

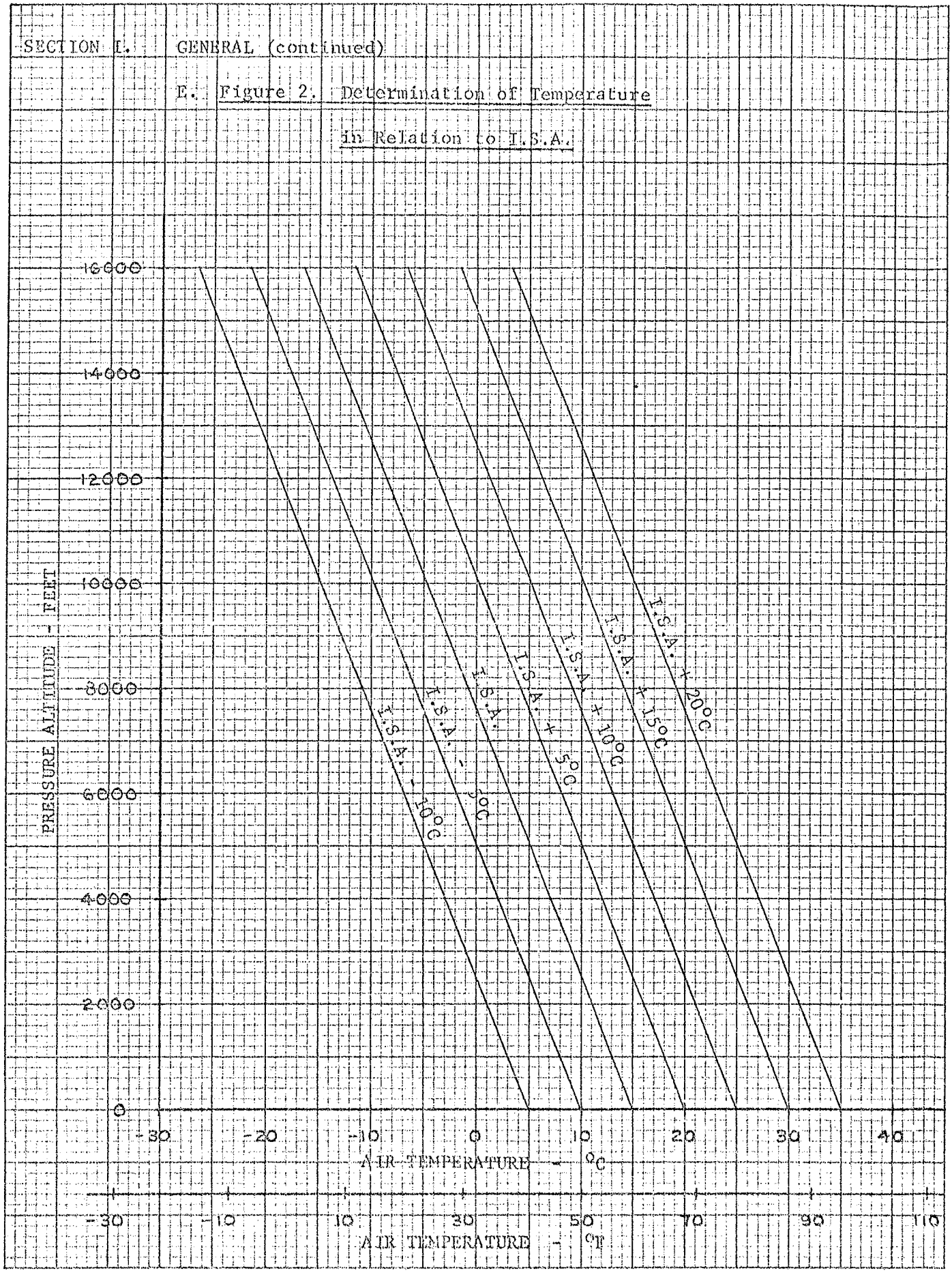
D. General Arrangement Drawing (not to scale)

FIGURE 1.



SECTION I. GENERAL (continued)

E. Figure 2. Determination of Temperature in Relation to I.S.A.



SECTION I. GENERAL, (continued)

F. Definitions

1. AIR TEMPERATURE

The temperature of the free air near to, but not influenced by the aeroplane. This temperature may be a reported, forecast or, when permitted by the Air Navigation Regulations, a declared temperature derived in accordance with an approved system.

2. ALTITUDE

The altitude shown on the charts is pressure altitude which is the expression of atmospheric pressure in terms of altitude above mean sea level according to the inter-relation of these factors in the International Standard Atmosphere (I.S.A.). This may be obtained by setting the sub-scale of an accurate pressure type altimeter at 1,013 millibars (29.92 inches or 760 millimeters of mercury).

3. I.S.A.

International Standard Atmosphere. See Page 10 for temperature variation versus altitude.

4. GRADIENT OF CLIMB

The tangent of the angle of climb expressed as a percentage i.e., $\frac{\text{change in height}}{\text{horizontal distance traveled}} \times 100$

SECTION I. GENERAL, (continued)

5. GROSS PERFORMANCE

The average performance which a fleet of aeroplanes can be expected to achieve or exceed if satisfactorily maintained and flown in accordance with the associated techniques described in the manual.

6. NET PERFORMANCE

The gross performance modified in the manner prescribed in the relevant requirement to make appropriate allowance for those variations from the Gross Performance which are not dealt with in Operational Regulations.

7. HARD RUNWAY

A surface such as concrete or tarmac.

8. HEIGHT

The lowest distance between the lowest part of the aeroplane and the relevant datum.

9. WEIGHT

The total weight of the aeroplane, including fuel, oil, equipment, crew and payload.

10. A.S.I.R.

The uncorrected Air Speed Indicator Reading.

SECTION I. GENERAL, (continued)

11. I.A.S.

The Indicated Air Speed, which is the A.S.I.R. corrected for instrument error only.

12. E.A.S.

The Equivalent Air Speed, which is I.A.S. corrected for position and compressibility errors.

13. T.A.S.

The True Air Speed of the aeroplance relative to the undisturbed air, which is the E.A.S. corrected for altitude and temperature.

14. TAKE-OFF SAFETY SPEED

The minimum speed at which, following sudden and complete failure of the engine in the take-off configuration, adequate control exists to establish a glide at a safe margin above the stall.

15. MANOEUVRING SPEED

The maximum speed for full application of primary flight controls.

16. V_{NO}

The Normal Operating Limit Speed which is the maximum cruising speed.

SECTION II. LIMITATIONS

THE AEROPLANE MUST BE OPERATED SO THAT THE LIMITATIONS AND INSTRUCTIONS IN THIS SECTION ARE OBSERVED.

A. The following weights given are maximum limitations.

1. The Maximum Take-off Weight is 2325 pounds.

2. The Maximum Landing Weight is 2325 pounds.

3. The Maximum Weight for the manoeuvres listed on Page 22 is 1950 pounds.

4. The aeroplane is not structurally limited by a zero fuel weight limit.

Rev. #2

B. Baggage Loading *

The maximum baggage capacity is 200 pounds. For aerobatic operation, baggage and aft passengers are not allowed.

C. Fuel System

1. There are no fuel loading limitations. However, it is recommended that the fuel load be symmetrical to provide better roll control.

2. The word "gallon" as used throughout this report means U.S. gallon unless otherwise stated.

3. The unusable fuel in this aircraft has been determined as 1.0 gallon in each wing in critical flight attitudes. (1.0 gallon is the total per side).

Items marked * must either be placarded or the applicable instrument colour marked.

SECTION II. LIMITATIONS (continued)

4. The usable fuel in this aircraft has been determined as 48.0 gallons in critical flight attitudes. (48.0 gallons is the total per aeroplane).

5. The fuel selector may be in either "Right Tank" or "Left Tank" position for any flight configuration. Use fullest tank for take-off and landing.

6. The electric fuel pump should be "ON" for take-off, landing and when the engine driven pump is inoperative. It is a good procedure to use the electric fuel pump when switching tanks.

D. Centre of Gravity

1. The aircraft loading is to be distributed so that the centre of gravity lies between the limits of 83.0 inches aft of the datum at 1950 pounds, 87.0 inches aft of the datum at 2325 pounds and an aft limit of 93.0 inches aft of the datum at 2325 pounds and below. The c.g. limitations have a straight line variation between the points given.

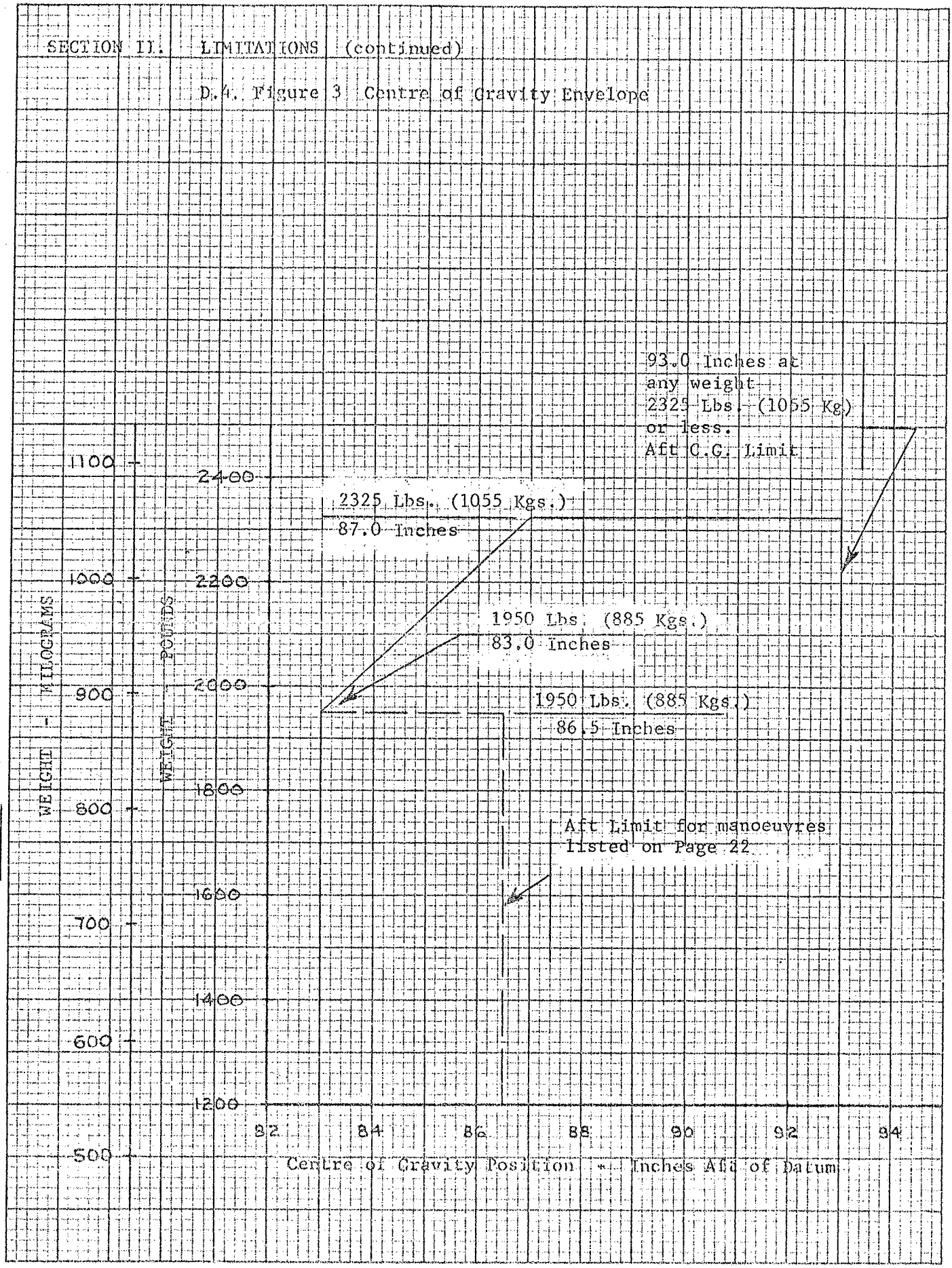
Rev #2

2. The load is to be distributed so that the centre-of-gravity for the manoeuvres listed on Pg. 22 lies between the limits of 83.0 inches aft of the datum at 1950 pounds and an aft limit of 86.5 inches aft of the datum at 1950 pounds and below.

3. The datum is 78.4 inches ahead of the wing leading edge at the inboard intersection of the straight and tapered section.

SECTION II. LIMITATIONS (continued)

D.4. Figure 3 Centre of Gravity Envelope



Rev. #2

SECTION II. LIMITATIONS (continued)

E. Power-Plant Limitations

ENGINE

Lycoming 0-320-E3D with carburetor setting 10-5009

PROPELLER

Sensenich 74 DM6-0-58

Diameter: 74 Inches Maximum
72 Inches Minimum

Pitch: 58 Inches

Static RPM at maximum permissible throttle setting:

Not over 2375 RPM

Not under 2275 RPM

No additional tolerance permitted.

McCauley 1C160EGM7653

Diameter: 76 Inches Maximum
74.5 Inches Minimum

Pitch: 53 Inches

Static RPM at maximum permissible throttle setting:

Not over 2400 RPM

Not under 2300 RPM

No additional tolerance permitted.

FUEL

The minimum grade of fuel approved for use in this engine is 80/87 octane aviation gasoline, specification No. D. Eng. R.D. 2485 with a maximum limit of 5.5 MLS, TEL/Imperial Gallon.

SECTION II. LIMITATIONS (continued)

OIL

The oil approved for use in this engine is to specification No. D Eng. 2472 grade B/O and the latest applicable Lycoming Specification.

OIL TEMPERATURE

Normal Operating Range	75°F to 245°F	(Green Arc)	*
Maximum	245°F	(Red Line)	*

OIL PRESSURE

A minimum oil pressure of 25 PSI should be obtained or exceeded within 30 seconds when starting the engine.

Normal Operating Range	60 PSI to 90 PSI	(Green Arc)	*
Caution Range	25 PSI to 60 PSI	(Yellow Arc)	*
Minimum	25 PSI	(Red Line	*
Maximum	90 PSI	(Red Line)	*

FUEL PRESSURE

Normal Operating Range	.5 PSI to 8 PSI	(Green Arc)	*
Maximum	8 PSI	(Red Line)	*
Minimum	.5 PSI	(Red Line)	*

ENGINE SPEED LIMITATIONS

The maximum permissible rotational speed for all conditions of flight is 2700 RPM (Red Line).* The normal operating range is 500 RPM to 2700 RPM (Green Arc).*

Items marked * must either be placarded or the applicable instrument colour marked.

SECTION II. LIMITATIONS (continued)

FUEL/AIR MIXTURE CONTROL

The operation and limitations of the fuel/air mixture shall be in accordance with the latest applicable Lycoming Specification.

F. Airspeed Limitations

1. The operating speed limitations are given in terms of indicated airspeeds (I.A.S.).

2. NEVER EXCEED SPEED, V_{NE}*

3. NORMAL OPERATING LIMIT SPEED, V_{NO}*

During normal cruising flight, the aeroplane should not be flown at a speed greater than V_{NO}. The aeroplane shall only be flown at speeds between the normal operating limit speed and the never exceed speed at the discretion of the pilot, having due regard to the prevailing atmospheric conditions.

4. MANOEUVRING SPEED*

Is 127 MPH - I.A.S. (111 Knots). Manoeuvres involving an approach to the stall or full application of aileron, stabilator, or rudder control shall not be undertaken at a speed greater than the manoeuvring speed.

5. WING-FLAPS EXTENDED SPEED, V_{FE}* (S/N 28-7415001 thru S/N 28-7515449)

Is 130 MPH - I.A.S. (113 Knots). The wing flaps shall not be extended when the aeroplane is flying at a speed greater than V_{FE}.

Rev #3

Items marked * must either be placarded or the applicable instrument colour marked.

SECTION II. LIMITATIONS (continued)

Rev. #3

WING-FLAPS EXTENDED SPEED, V_{FE}* (S/N 28-7615001 and up)

Is 119 MPH-IAS (103 KTS.). The wing flaps shall not be extended when the aeroplane is flying at a speed greater than V_{FE}.

Rev. #2

6. ENTRY SPEED FOR MANOEUVERS LISTED ON PAGE 22

Is 127 MPH - I.A.S. (111 Knots) for steep turns, Lazy Eights and Chandelles.

7. AIRSPEED INDICATOR COLOR MARKINGS

Green Arc

(Normal Operating Range) 65 MPH to 140 MPH (E.A.S.)

Yellow Arc

(Caution Range-Smooth Air) 140 MPH to 176 MPH (E.A.S.)

White Arc

Rev. #3

(Flaps Extended Range) 58 MPH to 125 MPH (E.A.S.)

(S/N 28-7415001 thru S/N 28-7515449)

(Flaps Extended Range) 58 MPH to 115 MPH (E.A.S.)

(S/N 28-7615001 and up)

Radial Red Line

(Never Exceed Speed-Smooth Air) 176 MPH (E.A.S.)

Items marked * must either be placarded or the applicable instrument colour marked.

SECTION II. LIMITATIONS (continued)

8. SUMMARY OF AIRSPEEDS

		I.A.S.		E.A.S.	
		MPH	KNOTS	MPH	KNOTS
1.	Never Exceed Speed, V_{NE}	185	160	176	153
2.	Normal Operating Limit Speed, V_{NO}	145	126	140	122
3.	Manoeuvring Speed	127	111	124	108
4.	Wings Flaps Extended Range (White Arc)	130	113	125	109
	(S/N 28-7415001 thru S/N 28-7515449)	51	44	58	50
	Wings Flaps Extended Range (White Arc)	119	103	115	100
	(S/N 28-7615001 and up)	51	44	58	50
5	Normal Operating Range (Green Arc)	145	126	140	122
		58	50	65	56
6.	Caution Range (Smooth Air Only -	185	160	176	153
	(Yellow Arc)	145	126	140	122
7.	Best R/C Speed at Gross Weight	86	75	87	76
8	Entry Speed for Steep Turns, Lazy Eights and Chandelles	128	111	124	108

Rev.

G. Miscellaneous Limitations

1. CATEGORY

Aircraft of this type are eligible for certification in the General Purpose Category. However, this aeroplane may be restricted to particular use or to some other category, and this will be stated in the Certificate of Airworthiness.

SECTION II. LIMITATIONS (continued)

2. VFR and IFR FLIGHT

Flying VFR and IFR during day or night is permitted when the required equipment is installed and when allowed by the Air Navigation Regulations.

3. FLIGHT BY NIGHT

Night flying is permitted when the required equipment is installed, and when allowed by the Air Navigation Regulations.

4. FLIGHT AT HIGH ALTITUDE

When flying above 10,000 feet, it is the pilot's responsibility to consider the physical limitations of the pilot and passengers, oxygen equipment required, and compliance with all applicable Air Navigation Regulations.

5. FLIGHT IN ICING CONDITIONS

The aeroplane is not approved for flight in icing conditions.

Rev. 1

6. APPROVED FLIGHT MANOEUVRES*

(a) The following manoeuvres are permitted provided the aeroplane is loaded within the approved weight and center of gravity limits.

(1) Steep Turns

(2) Lazy Eights

(3) Chandelles

Items marked * must either be placarded or the applicable instrument colour marked.

Rev. 1

SECTION II. LIMITATIONS (continued)

(b) Baggage and aft passengers are prohibited for all manoeuvres listed on Page 22, Item 6.

(c) All approved flight manoeuvres listed on page 22, Item 6 are prohibited above a gross weight of 1950 lbs.

(d) Aerobatic manoeuvres are not permitted.

7. FLIGHT LOAD FACTORS

The PA-28-151 structure has been designed to withstand a positive manoeuvring load factor of 4.4 g flaps up, 2.0 g with the flaps fully deflected (40°) and a negative manoeuvring load factor of 1.76 g flaps up without permanent deformation up to a gross weight of 1950 pounds.

The PA-28-151 structure has been designed to withstand a positive manoeuvring load factor of 3.8 g flaps up and 2.0 g with the flaps fully deflected (40°) without permanent deformation up to a gross weight of 2325 pounds.

8. MINIMUM CREW

The minimum crew is one pilot.

Items marked * must either be placarded or the applicable instrument colour marked.

SECTION II. LIMITATIONS (continued)

9. NUMBER OF OCCUPANTS

The total number of persons carried including crew shall not exceed four or the number of seats which are approved for use during take-off and landing. Children under the age of three years carried in the arms of passengers need not be included in the total.

10. SMOKING

Smoking is prohibited while the aeroplane is on the ground and during take-off and landing.

11. CLIMATIC CONDITIONS

The operating suitability of the aeroplane has been established for temperatures up to the range defined by I.S.A. + 20°C.

A minimum temperature has not been established.

12 AUTOMATIC-PILOT LIMITATIONS

The following limitations are for the Auto-Control III and Auto Flite II installations.

(a) Refer to Supplement number 2 for the limitations of the Auto-Control III installation.

(b) Refer to Supplement number 3 for the limitations of the Auto Flite II installation.

SECTION II. LIMITATIONS (continued)

13. ELECTRIC PITCH TRIM LIMITATION

Minimum height above the terrain for the operation of the electric pitch trim is 400 feet.

14. MAXIMUM ALTITUDE

The maximum permissible operating altitude is given as the absolute ceiling of the aeroplane which is 14,500 feet. (At gross weight and I.S.A. conditions).

15. ADDITIONAL PLACARDS

The following placards and markings are required to be displayed in the aeroplane:

(a) Adjacent to upper door latch - "Engage Latch Before Flight".

(b) On the instrument panel when strobe lights are installed - "Warning - Turn off strobe lights when taxiing in vicinity of other aircraft, or during flight through cloud, fog or haze".

(c) In full view of the pilot:

"Take-off Checklist

Fuel on proper tank
Electric fuel pump on
Engine gauges checked
Flaps - set
Carb. Heat off
Mixture - set
Seat backs erect
Fasten belts/harness
Trim Tab - set
Controls - free
Door - latched"

SECTION II. LIMITATIONS (continued)

(d) In full view of the pilot:

(S/N 7415001 thru S/N 28-7515449)	S/N28-7615001 & up
"Landing Checklist	"Landing Check List
Fuel on proper tank	Fuel on proper tank
Mixture rich	Mixture rich
Electric fuel pump on	Elec. Fuel pump on
Seat backs erect	Seat backs erect
Flaps - set (125 MPH)	Flaps-Set (115 MPH)
Fasten belts/harness"	Fasten belts/harness"

Re #3

(e) Adjacent to fuel tank filler cap - "Fuel, 80 - 87 Aviation Grade Min., Usable capacity 24 Gal., Usable Capacity to bottom of filler neck indicator 17 Gal."

(f) On the instrument panel, when the oil cooler winterization kit is installed - "Oil Cooler Winterization Plate to be removed when Ambient Temperature exceeds 50°F."

(g) On the instrument panel in full view of the pilot when the Autoflite II is installed:

"Turn Autoflite on. Adjust trim knob for minimum heading change. For heading change, press disengage switch on control wheel, change heading, release switch. Rotate turn knob for turn commands. Push turn knob in to engage tracker. Push trim knob in for Hi sensitivity. Limitations: Autoflite off for takeoff and landing."

16. VACUUM GAUGE

The operating limits for the vacuum system are 5.0 ± .1 inches of mercury.

SECTION II. LIMITATIONS (continued)

17. ENGINE STARTER

Limit engine starting to 30 second periods.

18. STALL WARNING SYSTEM

The stall warning system is inoperative with the master switch off.

SECTION III. EMERGENCY PROCEDURES

A. INTRODUCTION

This section contains procedures that are recommended if an emergency condition should occur during ground operation, take-off, or in flight. These procedures are suggested as usually the best course of action for coping with the particular condition described, but are not a substitute for sound judgement and common sense. Pilots should familiarize themselves with the procedures given in this section and be prepared to take appropriate action should an emergency arise.

B. ENGINE FIRE DURING START

Engine fires during start are usually the result of over priming. The procedures below are designed to draw the excess fuel back into the induction system:

1. Starter - continue to crank engine
2. Throttle - open
3. Mixture - idle cut-off
4. Electric Fuel Pump - off
5. Fuel selector - off (if time allows)
6. Abandon aircraft if fire continues

C. ENGINE POWER LOSS DURING TAKE-OFF

The proper action to be taken if loss of power occurs during take-off will depend on circumstances.

SECTION III. EMERGENCY PROCEDURES (continued)

1. If sufficient runway remains for a normal landing, land straight ahead.
2. If insufficient runway remains, maintain a safe airspeed and make only a shallow turn to avoid obstructions. Use of flaps depends on circumstances. Normally, flaps should be fully extended for touchdown.
3. If you have gained sufficient altitude to attempt a restart, proceed as follows:
   (a) Maintain safe airspeed
   (b) Fuel Selector - switch to another tank containing fuel.
   (c) Electric Fuel Pump - check on
   (d) Mixture - check rich
   (e) Carburetor Heat - on
4. If engine failure was caused by fuel exhaustion, power will not be regained after tanks are switched until empty fuel lines are filled, which may require up to ten seconds.
5. If power is not regained, proceed with the POWER OFF LANDING procedure.

SECTION III. EMERGENCY PROCEDURES (continued)

D. ENGINE POWER LOSS IN-FLIGHT

Complete engine power loss is usually caused by fuel flow interruption, and power will be restored shortly after fuel flow is restored. If power loss occurs at low altitude, the first step is to prepare for an emergency landing. (See POWER OFF LANDING.) Maintain an airspeed of at least 83 MPH IAS, and if altitude permits, proceed as follows:

1. Fuel Selector - switch to another tank containing fuel.
2. Electric Fuel Pump - on
3. Mixture - rich
4. Carburetor Heat - on
5. Engine Gauges - check for an indication of the cause of power loss
6. Primer - check locked
7. If no fuel pressure is indicated, check tank selector position to be sure it is on a tank containing fuel.
8. When power is restored:
   (a) Carburetor Heat - off
   (b) Electric Fuel Pump - off (If fuel pressure decreases below green arc, turn electric fuel pump - on, refer to Item III. H. page 34).

If the above steps do not restore power, prepare for an emergency landing. If time permits:

9. Ignition Switch - "L" then "R" then back to "BOTH"
10. Throttle and Mixture - different settings

SECTION III, EMERGENCY PROCEDURES (continued)

(This may restore power if problem is too rich or too lean a mixture, or partial fuel system restriction.)

11. Try another fuel tank - (Water in the fuel could take some time to be used up, and allowing the engine to windmill may restore power. If power loss is due to water, fuel pressure indications will be normal.)

12. If engine failure was caused by fuel exhaustion, power will not be regained after tanks are switched until empty fuel lines are filled, which may require up to ten seconds.

13. If power is not restored, proceed with POWER OFF LANDING Procedures.

E. POWER OFF LANDING

1. If loss of power occurs at altitude:

   (a) Trim the aircraft for best gliding angle (83 MPH-IAS).

   (b) Look for a suitable field.

   (c) [illegible]

2. If measures taken to restore power are not effective, and time permits, check charts for airports in the immediate vicinity for a possible landing.

3. Notify appropriate authorities of difficulty and pilot's intentions via radio.

SECTION III. EMERGENCY PROCEDURES (continued)

4. When a suitable field has been located:

   (a) Establish spiral pattern around the field

   (b) Attempt to have 1000 feet altitude above the ground at the downwind position.

   (c) As much as possible, make a normal approach.

   (d) Excess altitude may be lost by widening your pattern, using flaps, slipping, or a combination of these.

   (e) Touchdowns should normally be made at the lowest possible airspeed with full flaps.

5. When committed to a landing:

   (a) Ignition - off

   (b) Master Switch - off

   (c) Fuel Selector - off

   (d) Mixture - idle cut-off

   (e) Seat Belt and Harness - tight

F. FIRE

1. The aircraft is not equipped with a fire detection system. Thus, fire is detected by the following means:

   (a) Visual observation of flames or smoke

   (b) Smell

   (c) Presence of unusual heat in the cabin

2. Check the source of the fire by the following:

   (a) Visual observation

(b) Instrument readings

(c) Discerning the character of the smoke

3. Electrical Fire

(a) Master Switch - off

(b) Vents - open

(c) Cabin Heat - off

(d) Land as soon as practical

4. Engine Fire

(a) Mixture Control - idle cut-off

(b) Fuel Selector - off

(c) Electric Fuel Pump - check off

(d) Master Switch - off

(e) Magneto Switch - off

(f) Throttle - closed

(g) Dive to blow out fire (if altitude permits)

(h) Proceed with POWER OFF LANDING procedure.

G. LOSS OF OIL PRESSURE

1. Loss of oil pressure may be either partial or complete. A partial loss of oil pressure usually indicates a malfunction in the oil pressure regulating system, and a landing should be made as soon as possible to investigate the cause, and prevent engine damage.

SECTION III. EMERGENCY PROCEDURES (continued)

2. A complete loss of oil pressure indication may signify oil exhaustion or may be the result of a faulty gauge. In either case, proceed toward the nearest airport, and be prepared for a forced landing. If the problem is not a pressure gauge malfunction, the engine may stop suddenly. Maintain altitude until such time as a dead stick landing can be accomplished. Don't change power settings unnecessarily, as this may hasten complete power loss.

3. Depending on the circumstances, it may be advisable to make an off airport landing while power is still available, particularly if other indications of actual oil pressure loss, such as sudden increase in temperatures, or oil smoke, are apparent, and an airport is not close.

4. If engine stoppage occurs, proceed to POWER OFF LANDING.

H. LOSS OF FUEL PRESSURE

1. Electric Boost Pump - on

2. Fuel Selector - check on full tank

3. If problem is not an empty fuel tank:

   (a) Land as soon as practical

   (b) Have engine driven fuel pump checked

SECTION III. EMERGENCY PROCEDURES (continued)

I. HIGH OIL TEMPERATURE

1. An abnormally high oil temperature indication may be caused by a low oil level, an obstruction in the oil cooler, damaged or improper baffle seals, a defective gauge, or other causes. Land as soon as practical at an appropriate airport and have the cause investigated.
2. A steady rapid rise in oil temperature is a sign of trouble. Land at the nearest airport and let a mechanic investigate the problem. Watch the oil pressure gauge for an accompanying loss of pressure.

J. ALTERNATOR FAILURE

1. Loss of alternator output is detected through a zero reading on the ammeter.
2. Insure that the reading is zero and not merely low by actuating an electrically powered device.
3. If no increase in the ammeter reading is noted, alternator failure can be assured and the following should be executed:
   (a) Reduce electrical load
   (b) Alternator circuit breakers - check
   (c) "Alt" switch - off (for 30 seconds), then on.
4. If the ammeter continues to indicate no output, or alternator will not stay reset,:
   (a) Turn off "ALT" switch.
   (b) Maintain minimum electrical load.

SECTION III. EMERGENCY PROCEDURES (continued)

(c) Land as soon as practical.

(d) In this case, all electrical load is being supplied by the battery. The battery endurance is 39 minutes of night operation.

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K. ENGINE ROUGHNESS

1. Engine roughness is usually due to carburetor icing, and may be accompanied by a slight loss of airspeed or altitude. If too much ice is allowed to accumulate, restoration of full power may not be possible. Therefore, prompt action is required.

2. Carburetor heat - on (See Item K.4). RPM will decrease slightly and roughness will increase. Wait for a decrease in engine roughness or an increase in RPM, indicating ice removal. If no change in approximately one minute, return carburetor heat to COLD. If the engine is still rough, try steps below.

(a) Mixture - Adjust for maximum smoothness. Engine will run rough if too rich or too lean.

(b) Electric Fuel Pump - on.

(c) Fuel Selector - Change to other tank to see if fuel contamination is the problem.

(d) Engine Gauges - Check for abnormal readings. If any gauge readings are abnormal, proceed accordingly.

SECTION III. EMERGENCY PROCEDURES (continued)

(e) Magneto Switch - "L" then "R", then back to "BOTH". If operation is satisfactory on either magneto, proceed on that magneto at reduced power, with mixture full rich, to a landing at the first available airport.

3. If roughness persists, prepare for a precautionary landing at pilot's discretion.

4. Partial carburetor heat may be worse than no heat at all, since it may partially melt ice, which will re-freeze in the intake system. When using carburetor heat, therefore, always use full heat, and when ice is removed return the control to the full cold position.

L. SPINS

Intentional spins are prohibited. In the event that an unintentional spin is encountered, recovery can be accomplished by immediately using the following procedures:

1. Throttle - Idle
2. Rudder - Full opposite to direction of rotation.
3. Control Wheel - Full forward
4. Rudder - Neutral (when rotation stops)
5. Control Wheel - as required to smoothly regain level flight attitude.

M. OPEN DOOR

To close the door in flight, proceed as follows:

SECTION III. EMERGENCY PROCEDURES (continued)

1. Slow aircraft to 100 MPH-IAS
2. Cabin Vents - Close
3. Storm Window - Open
4. If upper latch is open - Latch
5. If lower latch is open:
   (a) Open top latch
   (b) Push door open further
   (c) Close rapidly
   (d) Top latch - latch
6. A slip to the right will assist in latching the door.

SECTION IV. NORMAL PROCEDURES

A. Preflight

1. Make sure the weather is suitable for the flight.
2. Plan the navigation (if going cross-country).
3. Check weight and balance for the flight. (See Figure 3 on page 16).
4. Investigate performance and range. (See performance section of this manual.

B. Walk-Around Inspection

1. In Cabin:

(a) Avionics - turn off, to save power and wear on the units.

(b) Master Switch - turn on.

(c) Fuel quantity - ensure adequate for flight plus reserve.

(d) Master Switch - turn off to save battery.

(e) Ignition Switch - should be off to prevent inadvertent start during inspection of propeller.

(f) Mixture Control - should be in idle cut-off position, again to prevent inadvertent engine start.

(g) Trim indicators - set to neutral so that tabs may be checked for alignment.

(h) Flaps - extend and retract to check operation. This should be done before engine start so that you can hear any noise which might indicate binding.

SECTION IV. NORMAL PROCEDURES (continued)

(i) Control wheel - if a seat belt is used as a control lock, unfasten and free control wheel.

(j) Paperwork - check that the proper aircraft papers are aboard and that the necessary inspections have been performed.

2. Outside Airplane

(a) Right wing, aileron and flap - no damage, no ice. Check hinges.

(b) Right main gear - no leaks, tires inflated and not excessively worn, approximately 4.5 inches piston exposed under static load. Check brake blocks and discs for wear and damage.

(c) Right wing tip and leading edge - no damage or ice.

(d) Fuel cap - open to check quantity and color of fuel. Check cap vent, and then secure.

(e) Right fuel sumps (2 locations) - drain, check fuel vent.

(f) Cowling - open access door to inspect engine.

(1) Check oil quantity - eight quarts maximum. Insure dipstick is properly seated.

(2) Check for obvious fuel and oil leaks.

(3) Secure access door and check cowling and inspection covers for security.

SECTION IV. NORMAL PROCEDURES (continued)

(g) Gascolator - drain.

(h) Windshield - check for damage and cleanliness.

(i) Propeller - check for nicks, oil leaks, cracks on spinner and security of spinner.

(j) Alternator belt - check.

(k) Nose Section - overall structure and surface undamaged. Check landing light condition.

(l) Nose Gear - check for leaks, approximately 3.25 inches piston exposed under static load, tire inflated and not excessively worn. Tow bar removed and stowed properly.

(m) Air Inlets - check for foreign matter (bottom of cowl and each wing root)

(n) Left Fuel sumps (2 locations) - drain, check fuel vent.

(o) Fuel Cap - open to check quantity and color of fuel. Check cap vent and then secure.

(p) Pitot Tube - holes unobstructed, heat checked by feel if need is anticipated.

(q) Left Main Gear - no leaks, tires inflated and not excessively worn, approximately 4.5 inches piston exposed under static load. Check brake blocks and discs for wear and damage.

SECTION IV. NORMAL PROCEDURES (continued)

(r) Stall Warning Vane - no damage, free movement.

(s) Left Wing Tip and Leading Edge - no damage or ice.

(t) Empennage - no damage, free of ice, hinges secure.

(u) Stabilator - freedom of motion.

(v) Antennas - secure and undamaged.

(w) Baggage Compartment Door - close and secure after baggage is properly stored and secured.

(x) Navigation and Landing Lights - check (after master switch and light switches have been turned on in cabin). Check panel and interior lights.

(y) Cabin Door - close and secure.

C. Before Starting Engine

1. Seats adjusted.
2. Seat belts, shoulder harness - fastened.
3. Parking brake - set.
4. Circuit breakers - in.
5. Radios - off.
6. Set carburetor heat control in the full cold position.
7. Fuel selector - select desired tank.
8. Alternator - on.

SECTION IV. NORMAL PROCEDURES (continued)

D. Starting Engine When Cold

1. Master Switch - on.
2. Electric Fuel Pump - on.
3. Mixture Control - advance to full rich.
4. Throttle Control - pump throttle control full open and closed 2 to 3 times then set control 1/4 open.
5. Starter - engage by rotating magneto switch clockwise and pressing in.
6. Throttle control - desired setting when the engine fires.
7. If engine does not fire within 5 to 10 seconds,
   (a) Starter - disengage.
   (b) Priming Pump - prime with one to three strokes.
   (c) Repeat steps 1 through 6 without pumping the throttle control.

E. Starting Engine When Hot

1. Throttle - open approximately 1/2 inch.
2. Master Switch - on.
3. Electric Fuel Pump - on.
4. Mixture Control - idle cut-off.
5. Starter - engage by rotating magneto switch clockwise and pressing in.
6. When the engine fires,
   (a) Mixture Control - advance.
   (b) Throttle Control - advance to desired setting.

SECTION IV. NORMAL PROCEDURES (continued)

F. Starting Engine When Flooded

1. Throttle Control - open full.
2. Master Switch - on.
3. Electric Fuel Pump - off.
4. Mixture Control - idle cut-off.
5. Starter - engage by rotating magneto switch clockwise and pressing in.
6. When the engine fires,
   (a) Mixture Control - advance.
   (b) Throttle Control - retard to desired setting.

G. General Information for Starting Engine

1. When engine is firing evenly - advance throttle to 800 RPM.
2. If oil pressure is not indicated within 30 seconds,
   (a) Stop engine.
   (b) Determine trouble.
   (c) Oil pressure indication may take longer in cold weather.
3. If engine has failed to start refer to the "Lycoming Operating Handbook, Engine Troubles and their Remedies".
4. Starter cranking is limited to 30 seconds with a two minute delay between cranking periods. Longer cranking periods decrease the life of the starter.

SECTION IV. NORMAL PROCEDURES (continued)

H. Taxi

1. Before taxiing, the brakes should be checked by moving forward a few feet, throttling back and applying pressure on the toe pedals. The following equipment may be checked during taxiing.

   (a) Instruments - turn indicator, directional gyro, coordination ball.

   (b) Heater and Defroster - especially important on a cold day.

2. The autopilot, if installed, should be off during taxiing, and the electric fuel pump should be off in order to check the operation of the engine-driven fuel pump.

I. Before Take-off

1. Warm up engine between 800 RPM and 1200 RPM.

   (a) Limit to two minutes in warm weather.

   (b) Limit to four minutes in cold weather.

2. Avoid prolonged idling at low RPM.

3. If necessary to hold for take-off, it is recommended to idle engine at 1200 RPM.

4. A thorough check should be made before take-off, using a check list. Before advancing the throttle to check the magnetos, be sure that the engine is warm enough to accept the power if it is a cold day. If there is no hesitation in engine action when throttle

SECTION IV. NORMAL PROCEDURES (continued)

is advanced, the engine is warm enough.

(a) Parking Brake - on.

(b) Engine run-up.

(1) Throttle Control - forward to 2000 RPM.

(2) Mixture Control - full rich.

(3) Electric fuel pump - on.

(4) Magnetos - check (right and left)

Maximum drop - 175 RPM.

Maximum differential drop - 50 RPM.

(5) Carburetor Heat - on. A drop in RPM indicates proper operation. Turn carburetor heat off.

(6) Throttle Control - retard, 800 RPM to 1200 RPM.

(c) Fuel Selector - on proper tank.

(d) Engine Gauges - in the green arc.

(e) Vacuum Gauge - 5.0 inches of mercury.

(f) Alternator - on.

(g) Altimeter - set.

(h) Attitude Indicator - set.

(i) Clock - wound and set.

(j) Quadrant Friction - adjusted.

(k) Wing Flaps - set.

(l) Trim Tabs (stabilator and rudder) - set.

(m) Controls - free, full travel.

SECTION IV. NORMAL PROCEDURES (continued)

(n) Seat Backs - erect.

(o) Seat Belts and Shoulder Harness - fasten.

(p) Cabin Door - latched.

J. Normal Take-Off (Flaps Up)

Take off should not be attempted with ice or frost on the wings. Take-off distances and 50-foot obstacle clearance distances are shown on charts in the Performance Section of this manual. The performance shown on charts will be reduced by soft, wet or grassy surface.

Avoid fast turns onto the runway, followed by immediate take-off, especially with a low fuel supply. As power is applied at the start of the take-off roll, look at the engine instruments to see that the engines are operating properly and putting out normal power, and at the airspeed indicator to see that it is functioning.

The take-off performance given on pages 63 and 66 is based on a take-off speed of 74 MPH IAS (64 Kts. IAS). Accelerate the aeroplane to this airspeed and rotate. This airspeed applies to any take-off weight.

SECTION IV. NORMAL PROCEDURES (continued)

K. Crosswind Component

1. The maximum crosswind component in which the aeroplane has been demonstrated to be safe for take-off and landing is 17 knots at a tower height of 33 feet.

L. Take-Off Climb

The climb performance presented on page 69 is based on a climbing speed of 64 knots - IAS (74 MPH - IAS). The electric fuel pump may be turned off when a safe altitude has been attained.

M. Normal Climb

The climb performance presented on page 72 is based on a climbing speed of 74 Knots - IAS (86 MPH - IAS) at a gross weight of 2325 pounds. The electric fuel pump may be turned off when a safe altitude has been attained.

N. Normal Cruise

When leveling off at cruise altitude, the pilot may reduce to a cruise power setting in accordance with the Power Setting Table in the Owner's Handbook. The normal cruising power is 75 percent of the rated horsepower of the engine. The mixture should be leaned in accordance with the recommendations for the O-320-E3D engine in the Lycoming Operator's Manual which is provided with the aircraft.

SECTION IV. NORMAL PROCEDURES (continued)

In order to keep the aeroplane in best lateral trim during cruising flight, the fuel should be used alternately from each main tank. It is recommended that one main tank be used for one hour after take-off, then the other main tank be used until nearly exhausted, then return to the first main tank. Do not run tanks completely dry in flight.

O. Approach and Landing

Prior to entering the traffic pattern the following landing checklist should be observed:

1. Seat Backs - erect.
2. Seat Belts and Shoulder Harness - fastened.
3. Fuel Selector - on proper tank.
4. Electric Fuel Pump - on.
5. Mixture Control - full rich.
6. Flaps - set as required:
   (a) Maximum speed permissible to lower the flaps is 113 Kts-IAS (130 MPH-IAS). S/N 28-7415001 thru S/N 28-7515449)
   103 KTS-IAS (119 MPH-IAS)(S/N28-7615001 and up)
   (b) Flaps up, approach speed is 71 Kts - IAS (82 MPH-IAS).
   (c) 10° (first notch), approach speed is 69 Kts - IAS, (79 MPH - IAS).
   (d) 25° (second notch), approach speed is 66 Kts - IAS, (76 MPH - IAS).
   (e) 40° (third notch), approach speed is 63 Kts - IAS, (73 MPH - IAS).

Re #3

SECTION IV. NORMAL PROCEDURES (continued)

7. Carburetor Heat - off. Use carburetor heat only when there is an indication of carburetor icing. Use of carburetor heat reduces the power which may be critical in the case of a go-around. Additionally, full throttle operation with carburetor heat on is likely to cause detonation.

The amount of flap used during landings and speed of the aircraft at contact with the runway should be varied according to the landing surface and conditions of wind and aeroplane loading. It is generally good practice to contact the ground at minimum possible safe speed consistent with existing conditions.

Normally, the best technique for short and slow landings is to use full flap and enough power to maintain the desired airspeed and approach flight path. Reduce the airspeed during flare out and contact the ground close to stalling speed. After ground contact hold the nose wheel off as long as possible. As the aeroplane slows down, lower the nose and apply brakes. There will be less chance of skidding the tires if the flaps are retracted before applying the brakes. Braking is most effective when back pressure is applied to the control wheel, putting most of the aeroplane weight on the main wheels. In high wind conditions, particularly in strong

SECTION IV. NORMAL PROCEDURES (continued)

crosswinds, it may be desirable to approach the ground at higher than normal speeds with partial or no flaps. The landing performance presented on page 76 is for full flaps, 40° deflection and variable weight.

P. Post Landing

After leaving the runway

1. Electric Fuel Pump - off.

Q. Engine Shut-Down

1. Radio and Electrical Equipment - off.
2. Throttle Control - closed.
3. Mixture Control - idle cut-off.
4. Magneto Switch - off.
5. Master Switch - off.
6. Parking Brake - on.

R. Rough Air Flight

In conditions of extreme turbulence, reduce power to slow the aeroplane slightly below the design manoeuvring speed of 111 Kts - IAS (127 MPH - IAS).

When flying in extreme turbulence or strong vertical currents and using the autopilot, the altitude-hold mode should not be used.

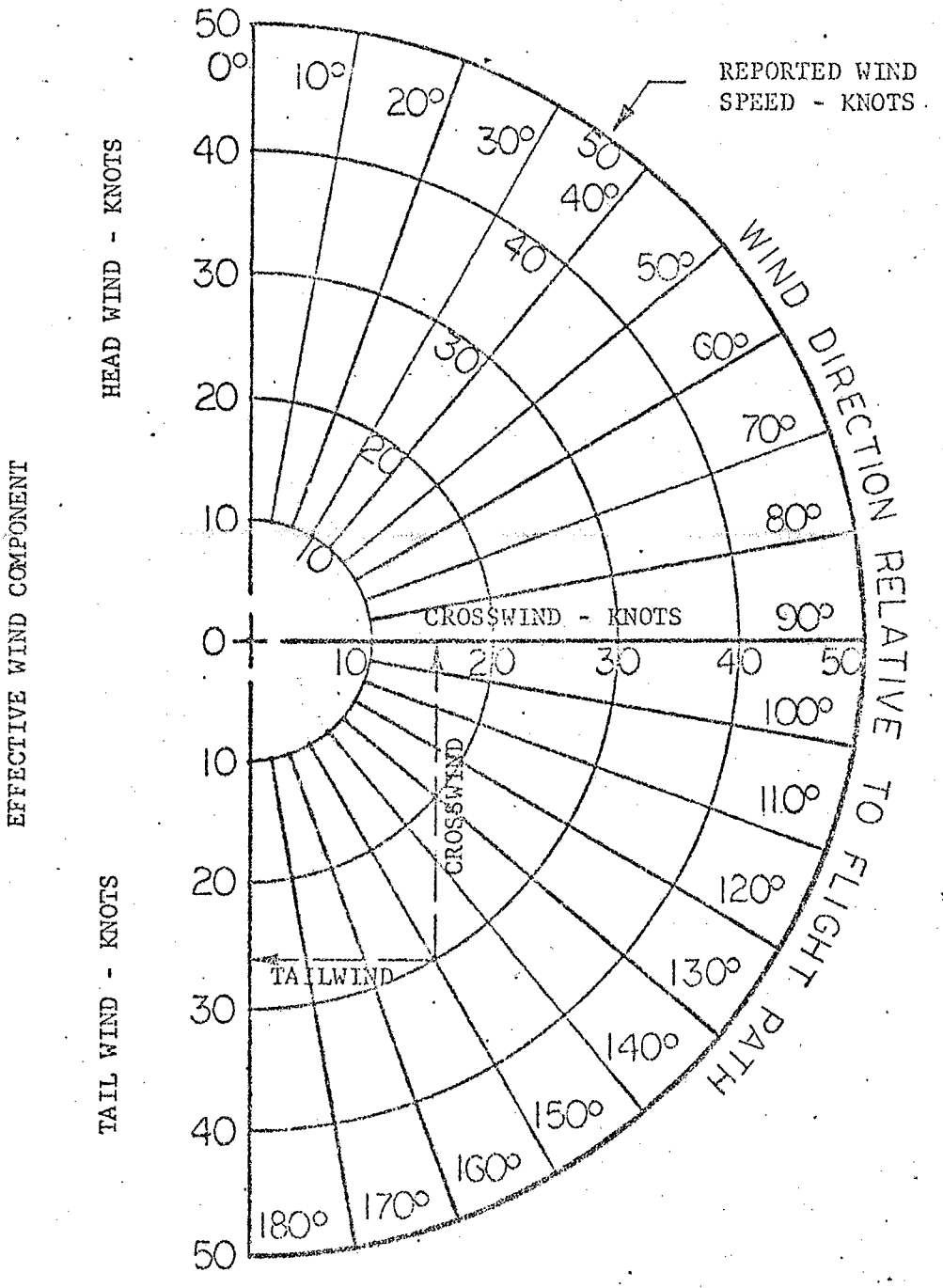
SECTION V. PERFORMANCE

A. General

1. The aeroplane is classified in Performance Group D.
2. The representative cruising true airspeed for flight over water is 110 knots (127 MPH).
3. The performance presented in this section is based upon the aeroplane using the engine and propellers listed in the Limitations Section of this manual.
4. The performance may not be extrapolated beyond the limits stated in this manual and those presented on the graphs.
5. A graph for conversion of wind velocities to the wind component along the flight path is presented on page 53 of this manual.

SECTION V. PERFORMANCE (Continued)

Conversion of Wind Velocities - Figure 4.

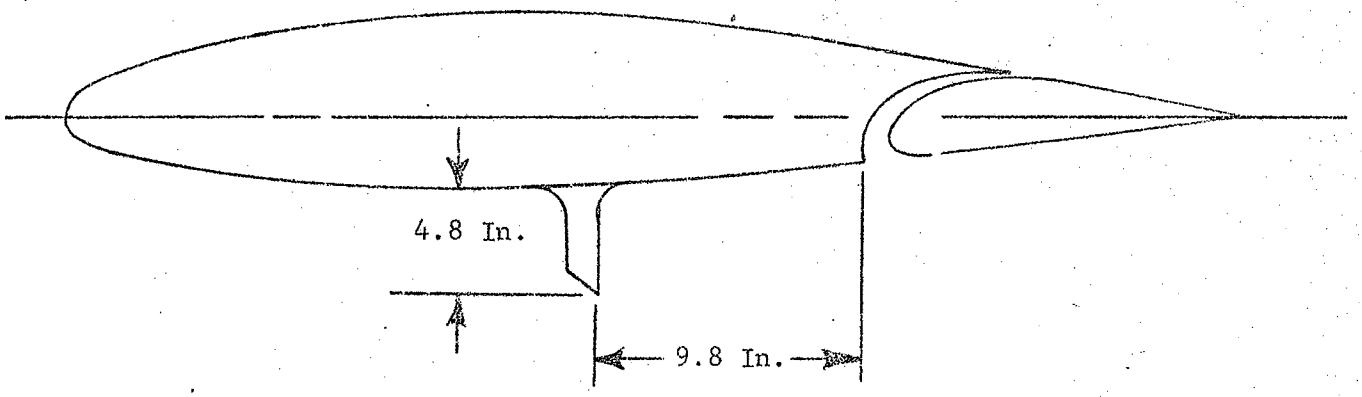


Example: Reported wind is 30 Knots and 150° relative to the aeroplane flight path or runway heading. The crosswind component is 15 Knots and the tailwind component is 26 Knots.

SECTION V. PERFORMANCE, (continued)

6. Pitot head location

(a) Figure 5.



(b) Left wing location is Station 124.4 Inches.

(c) Pitot head is parallel to the centerline of the aeroplane.

(d) A static vent is located in the bottom of the pitot head.

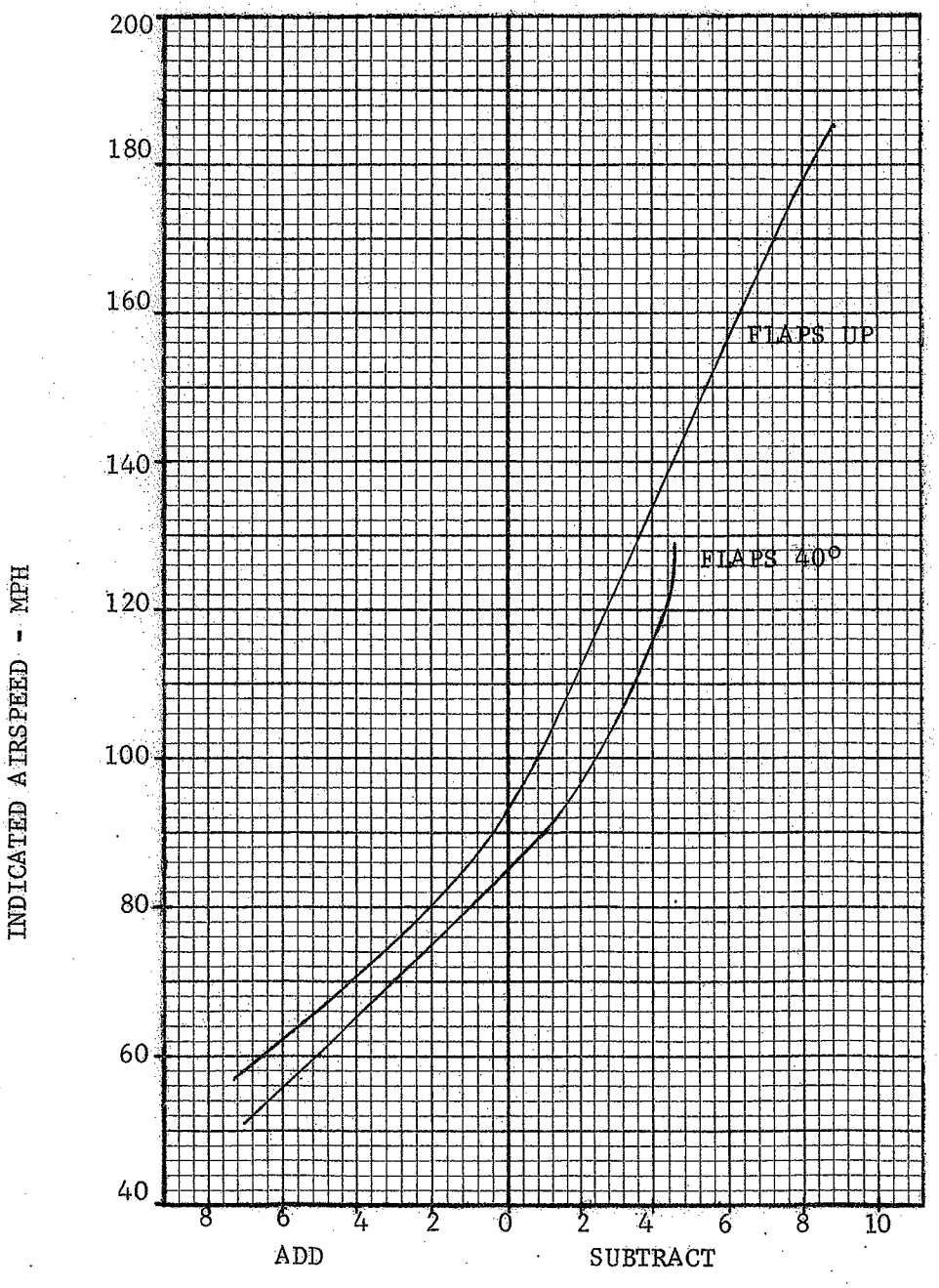
7. The position error corrections to be applied to the I.A.S. to obtain E.A.S. are shown in Figures 6 and 7. Corrections are based on a weight of 2325 pounds. The variation of the correction at other weights is small.

8. The maximum static error to the altimeter is less than 50 feet in all conditions.

SECTION V. PERFORMANCE (continued)

7. Position Error Correction to obtain E.A.S.

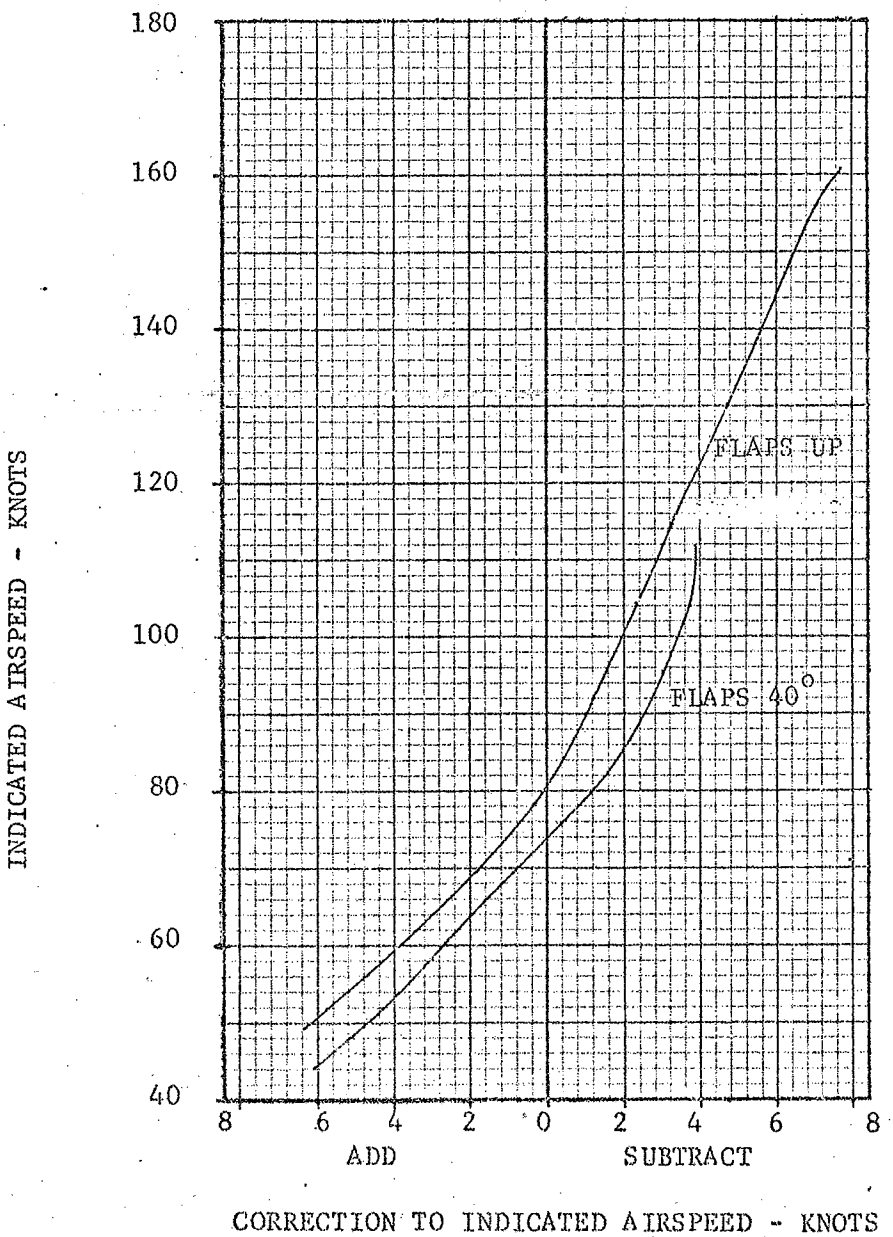
(a) Figure 6 .



SECTION V. PERFORMANCE (continued)

7. Position Error Correction to obtain E.A.S.

(a) Figure 7.



SECTION V. PERFORMANCE (continued)

9. The power-off stalling speeds for several bank angles at forward C.G., and gross weight are given in the following tables.

Angle of Bank	0°				20°				40°			
	I.A.S.		E.A.S.		I.A.S.		E.A.S.		I.A.S.		E.A.S.	
	MPH	Kts	MPH	Kts	MPH	Kts	MPH	Kts	MPH	Kts	MPH	Kts
Flaps Up	58	50	65	56	60	52	67	58	69	60	74	64
Flaps 40°	51	44	58	50	53	46	60	52	62	53	66	58

Angle of Bank	50°				60°			
	I.A.S.		E.A.S.		I.A.S		E.A.S.	
	MPH	Kts	MPH	Kts	MPH	Kts	MPH	Kts
Flaps Up	78	67	80	70	91	79	91	79
Flaps 40°	69	60	72	63	82	71	82	71

SECTION V. PERFORMANCE (continued)

B. MAXIMUM TAKE-OFF AND LANDING WEIGHT FOR ALTITUDE AND TEMPERATURE - FIGURE 8.

The maximum permissible take-off weight for varying altitudes and temperatures is shown in figure 8.

The example given by the arrowed dashed line shows that for an aerodrome altitude of 3800 ft. and an air temperature of 25°C (ISA + 18°C, 77°F) the maximum permissible take-off and landing weight is 2220 Lbs. (1007 Kgs.).

NOTE:

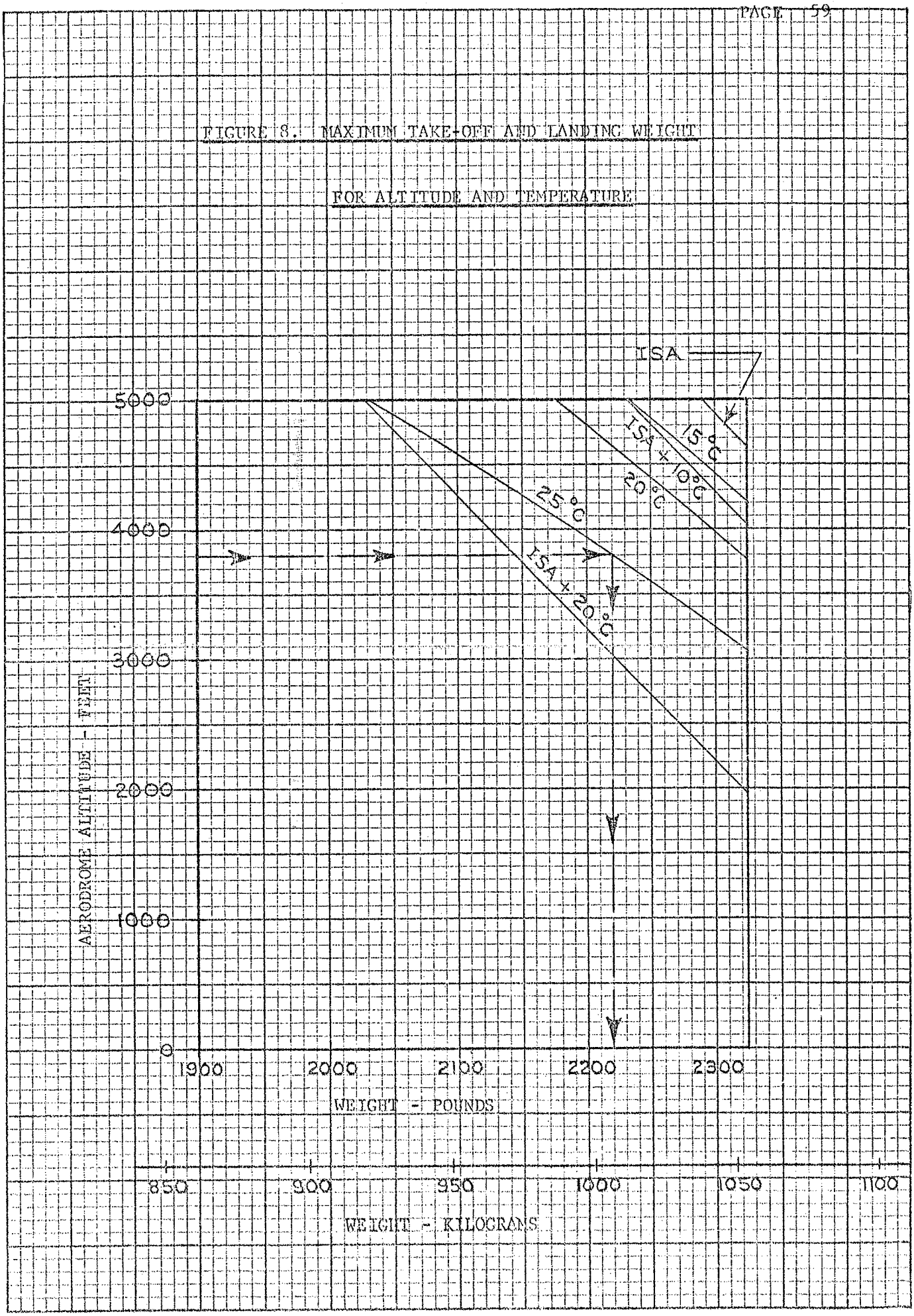
The weight may be limited by other performance considerations such as take-off distance or obstacle clearance becoming critical.

EXPLANATION OF FIGURE

By observing the weight-altitude-temperature data in figure 8 the PA-28-151 will have a gross rate of climb of 400 feet per minute (flaps up) at the take-off surface.

FIGURE 8: MAXIMUM TAKE-OFF AND LANDING WEIGHT

FOR ALTITUDE AND TEMPERATURE



SECTION V. PERFORMANCE (continued)

C. Take-off Procedures and Speeds

1. TAKE-OFF TECHNIQUE

With the flaps up and the engine at full throttle, accelerate the aeroplane to the take-off safety speed of 64 Knots - I.A.S. (74 MPH - I.A.S.) and initiate the lift-off. This speed applies to all weights and altitudes.

2. MAXIMUM CROSSWIND COMPONENT

The maximum crosswind component in which the aeroplane has been demonstrated to be safe for take-off and landing is 17 Knots (20 MPH) at a tower height of 33 feet.

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SECTION V. PERFORMANCE (continued)

D. Take-off Field Lengths

1. TAKE-OFF RUN REQUIRED - FIGURE 9.

The take-off run required from rest to the point of lift off is shown in Figure 9. for varying air temperatures, aerodrome altitudes, weights, reported wind components and uniform runway slopes.

ASSOCIATED CONDITIONS:

Engine	Full Throttle
Wing Flaps	Retracted
Technique	Accelerate to the take-off safety speed of 74 MPH-I.A.S., 64 Knots (77 MPH-E.A.S., 67 Knots). This take-off safety speed is for all weights and altitudes and lift off should be initiated at this speed.
Runway	Dry Tarmac Runway (See Note 2).

ILLUSTRATED EXAMPLE:

The example given by the arrowed dashed line shows that with an air temperature of 21°C (I.S.A. + 7° C, 70°F) at an aerodrome altitude of 500 feet and a weight of 1980 pounds (900 Kg.), with a reported headwind component of 10 knots and a uniform uphill runway slope of 1%, the take-off run required is 1830 feet (558 metres).

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NOTES:

(1) The measured take-off run required has been factored by 1.15 to obtain the scheduled take-off run required.

SECTION V. PERFORMANCE (continued)

(2) For operation from short dry grass, the distances given for a dry tarmac runway should be increased by 6.5%.

(3) The wind correction grids are factored so that 50% of headwinds and 150% of tailwinds are obtained. Reported winds may, therefore, be used directly in the grids.

FIGURE 9. TAKE-OFF RUN REQUIRED

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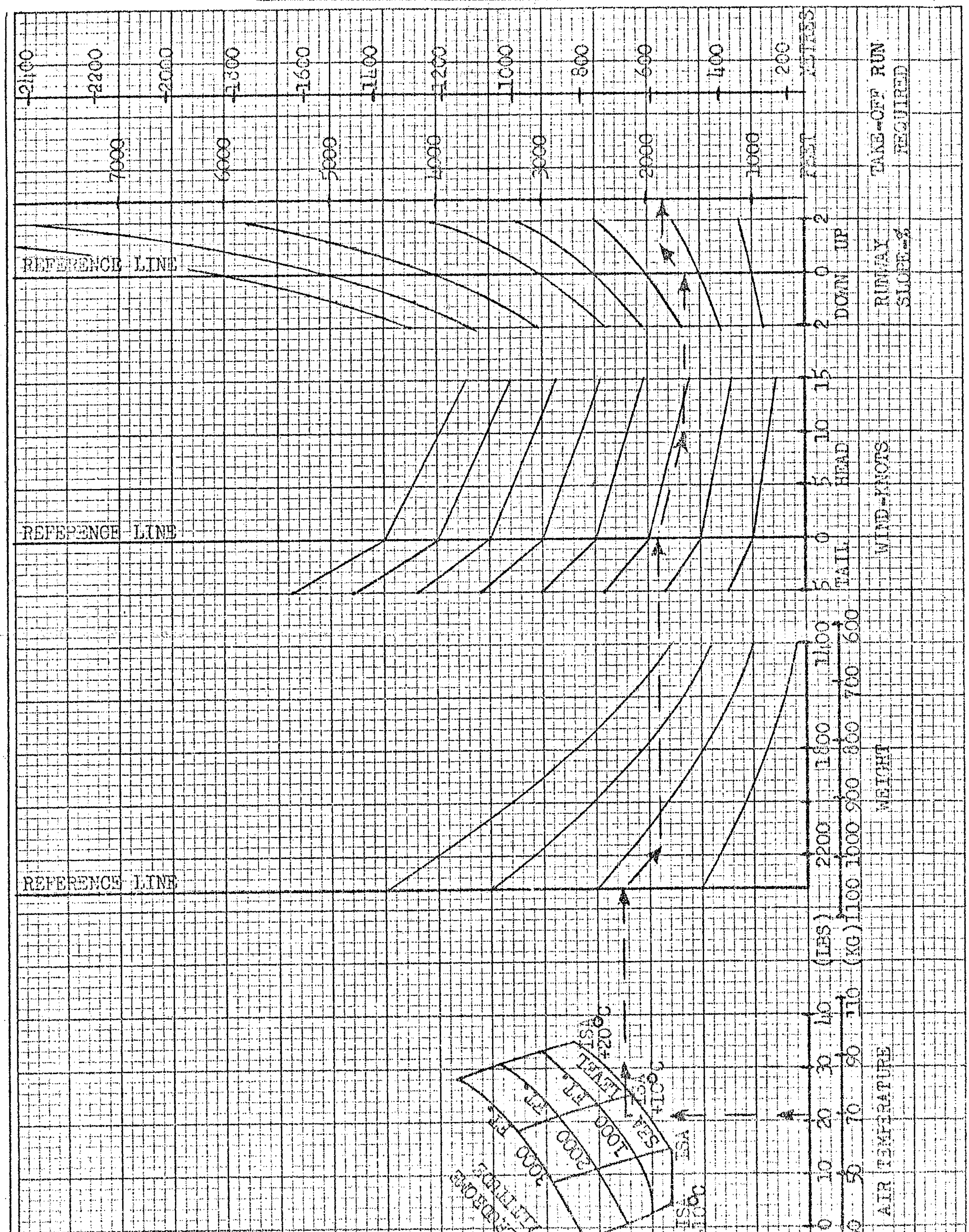
#2



SECTION V. PERFORMANCE (continued)

2. TAKE-OFF DISTANCE REQUIRED - FIGURE 10.

The take-off distance required from rest to the 50 ft. height point is shown in Figure 10 for varying air temperatures, aerodrome altitudes, weights, reported wind components and uniform runway slopes.

ASSOCIATED CONDITIONS:

Engine	Full Throttle
Wing Flaps	Retracted
Technique	Accelerate to the take-off safety speed of 74 MPH-I.A.S., 64 Knots (77 MPH-E.A.S., 67 Knots) and rotate. This take-off safety speed is for all weights and altitudes.
Runway	Dry Tarmac Runway

ILLUSTRATED EXAMPLE:

The example given by the arrowed dashed line shows that with an air temperature of 23°C (I.S.A. + 9°C, 73°F), at an aerodrome altitude of 400 feet and a weight of 2100 pounds (956 Kg.), with a reported tailwind component of 2 knots and a uniform downhill runway slope of 1%, the take-off distance required is 2700 feet (823 metres).

Rev. #2

NOTES:

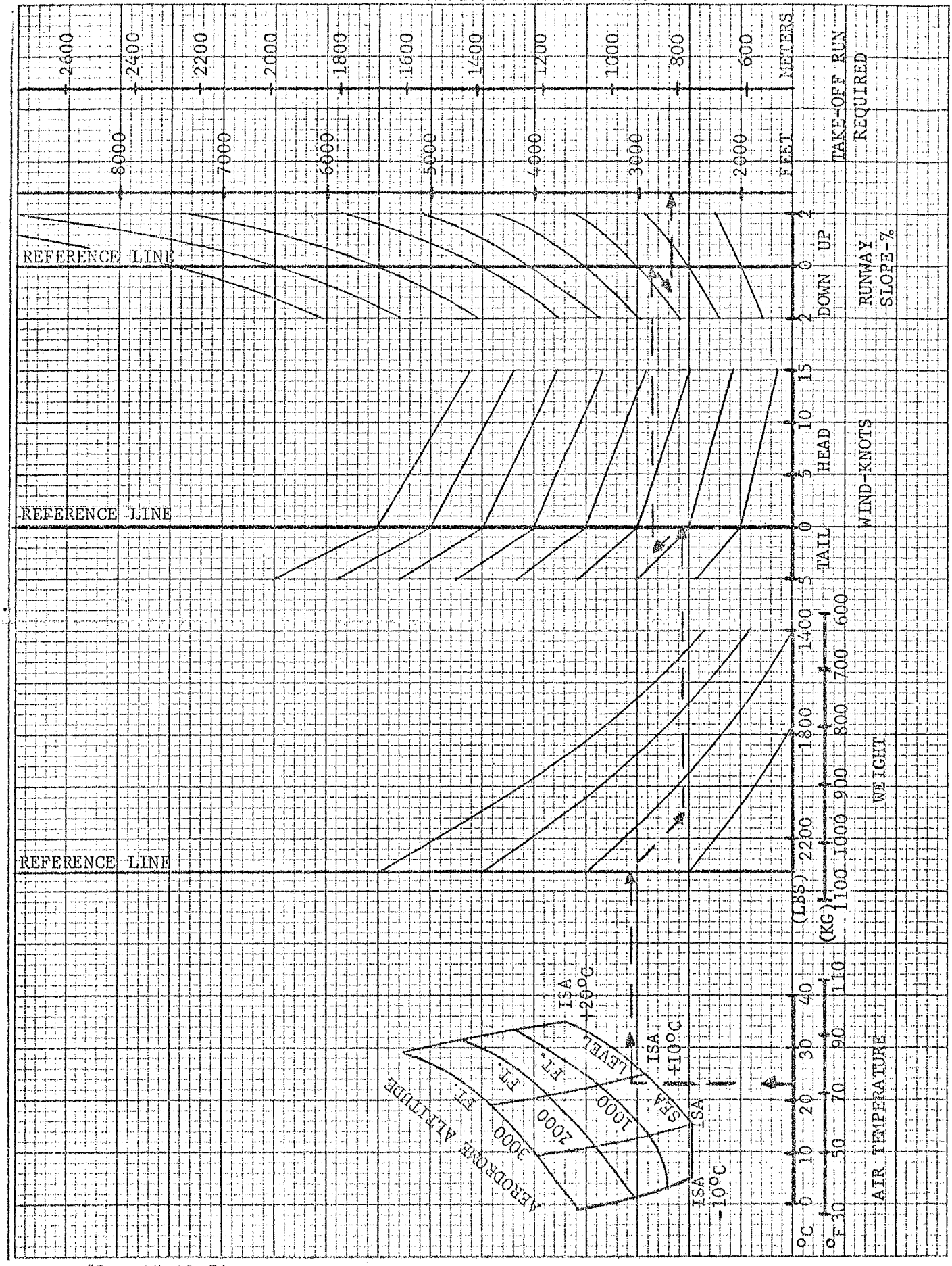
(1) The measured take-off over 50 feet distance has been factored by 1.25 to obtain the scheduled take-off distance required.

SECTION V. PERFORMANCE (continued)

(2) The wind correction grids are factored so that 50% of headwinds and 150% of tailwinds are obtained. Reported winds may, therefore, be used directly in the grids.

(3) For operation from short dry grass, refer to page 62, Note (2), to correct for the additional take-off run required.

FIGURE 10. TAKE-OFF DISTANCE REQUIRED



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SECTION V. PERFORMANCE (continued)

E. NET TAKE-OFF FLIGHT PATH

The net gradient of climb between 50 feet height and 1000 feet height is shown in Figure 11 for varying air temperatures, aerodrome altitudes, weights and reported wind components.

ASSOCIATED CONDITIONS:

Engine	Full Throttle
Wing Flaps	Retracted
Airspeed	74 MPH - I.A.S., 64 Knots (71 MPH-E.A.S., 67 Knots)
	This speed is valid for all weights and altitudes.

ILLUSTRATED EXAMPLE

The example given by the arrowed dashed lines shows that with an air temperature of 24°C (I.S.A. + 13°C, 75°F) at an aerodrome altitude of 2000 feet, a weight of 1800 pounds (816 Kg.) and a reported headwind component of 10 Knots, the net gradient of climb is 9.4%.

The horizontal distance traveled to climb from 50 feet to 1000 feet above the terrain is calculated as follows:

Height increment (for every case) is 1000-50 = 950 feet.

Horizontal distance = $\frac{950 \times 100}{9.4}$ = 10106 feet

10106 feet x (.3048 metres/foot)= 3080 metres

SECTION V. PERFORMANCE (continued)

NOTES:

(1) The data given in Figure 11 has been derived from gross performance reduced by a margin of 2.0% gradient.

(2) The wind correction grids are factored so that 50% of headwinds and 150% of tailwinds are obtained. Reported winds may, therefore, be used directly in the grids.

RADIUS OF A STEADY TURN

If, in the flight path construction a significant change of heading is to be assumed, the radius of turn can be assumed to be 2350 feet (a steady rate one, 180° per minute turn).

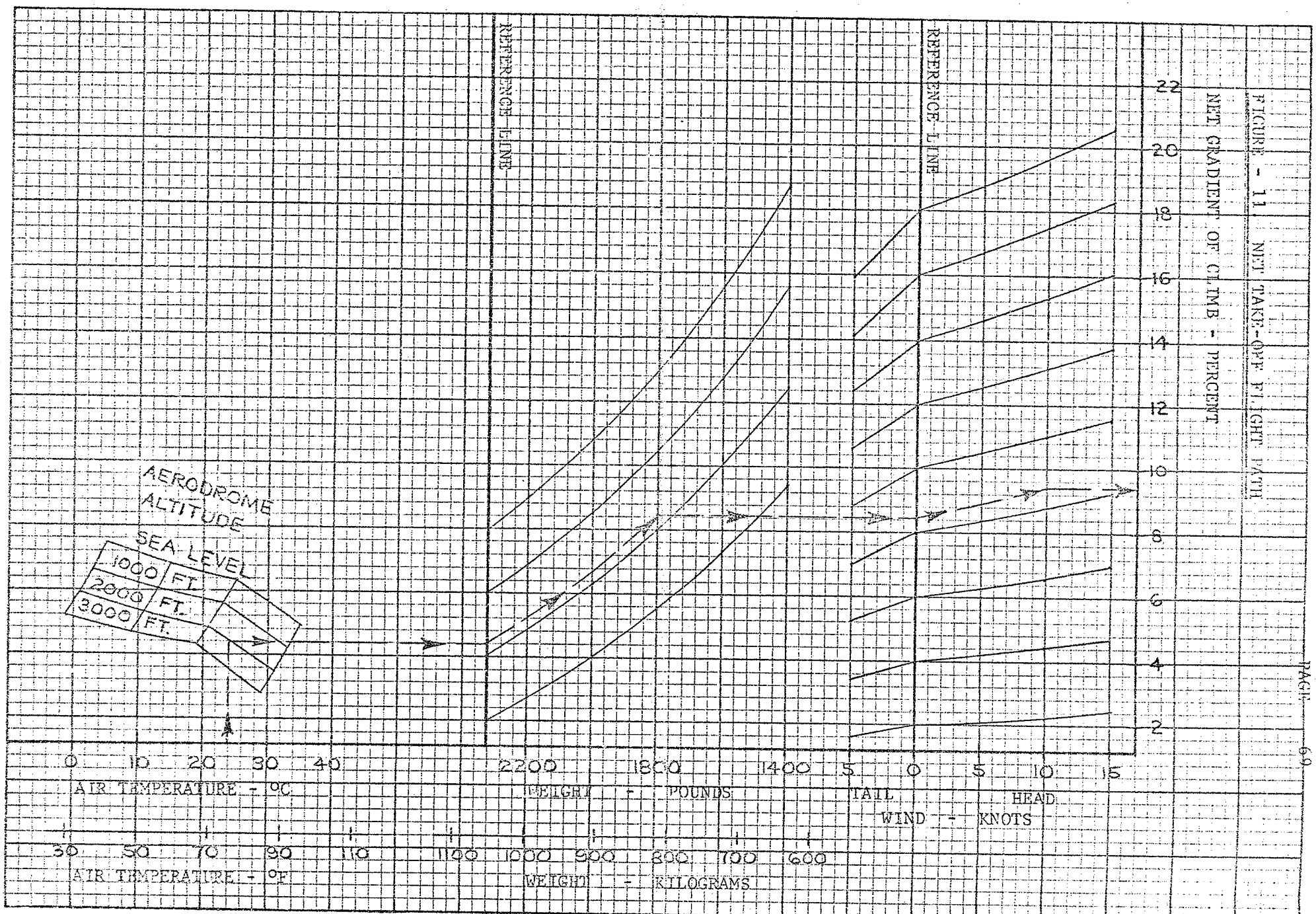

FIGURE - 11 NET TAKE-OFF FLIGHT PATH

ORIGINAL

SECTION V. PERFORMANCE (continued)

F. En Route Performance

1. EN ROUTE PERFORMANCE CEILING AND GROSS RATE OF CLIMB - FIGURE 12.

The en route performance ceiling may be obtained from Figure 12 for varying weights, altitudes and air temperatures. The chart may also be used to determine the gross pressure rates of climb.

ASSOCIATED CONDITIONS:

Engine	Full Throttle		
Wing Flaps	Retracted		
Airspeed		I.A.S.	E.A.S.
	2325 Lbs.	86 MPH (75 Kts.)	87 MPH (76 Kts.)
	1400 Lbs.	86 MPH (75 Kts.)	87 MPH (76 Kts.)

(Straight line variation between the points given for E.A.S.)

Rev. 1

ILLUSTRATED EXAMPLE:

The example A given by the arrowed dashed line shows that for a weight of 2120 pounds (962 Kgs.) in an atmosphere of I.S.A. + 20°C, the performance ceiling is 9,400 feet.

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The example B shows that at a pressure altitude of 3,000 feet in an atmosphere of I.S.A. + 10°C at a weight of 1800 pounds (816 Kgs.), the gross pressure rate of climb is 808 feet per minute.

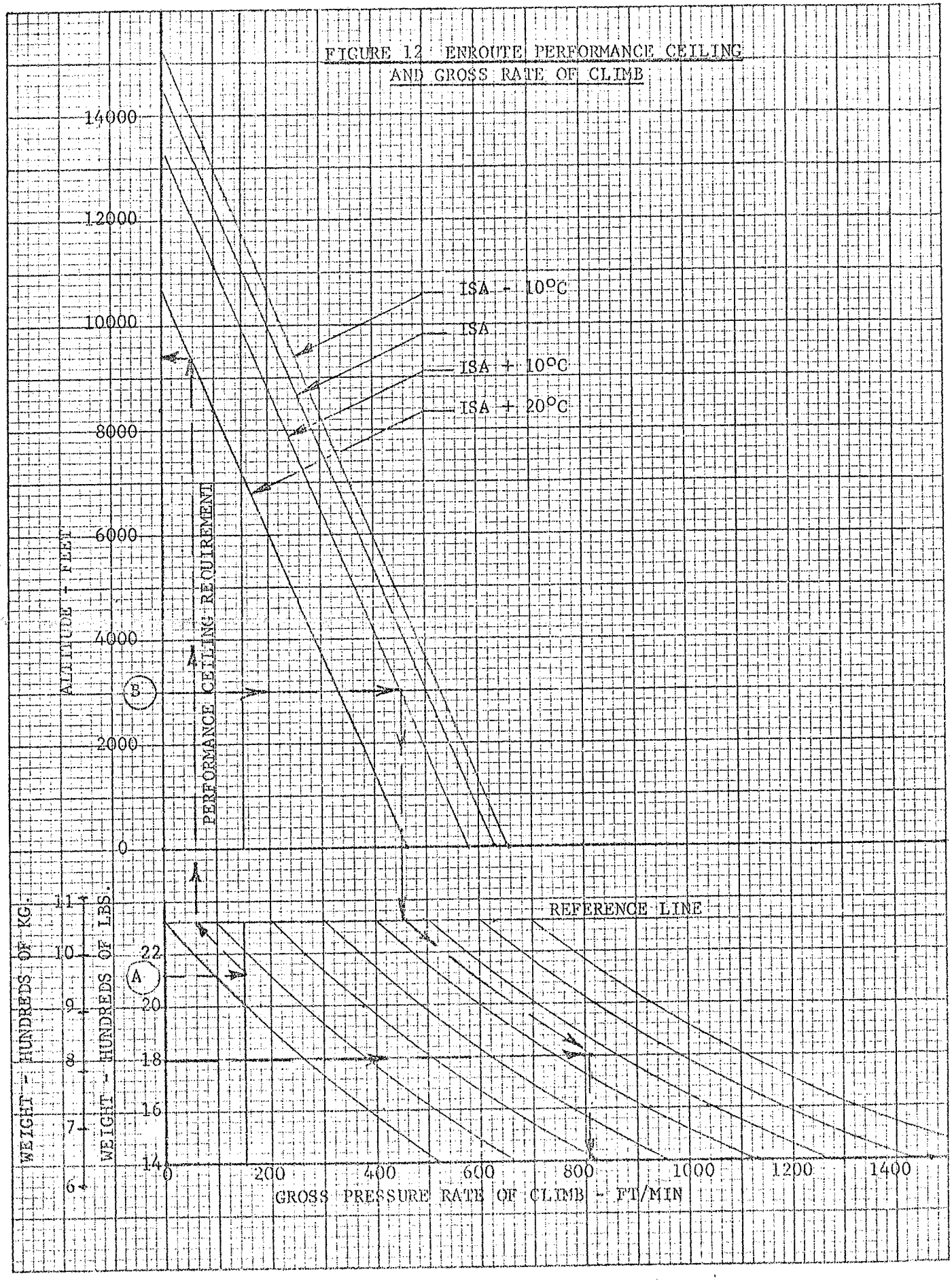
Rev.

SECTION V. PERFORMANCE (continued)

NOTES:

(1) The performance ceiling is the maximum altitude which may be assumed when establishing compliance with the operating regulations pertaining to en route flight. It does not prohibit flying at a higher altitude (although at some altitudes, the operating regulations may require oxygen to be carried), but it is unlikely that the performance ceiling will be achieved unless full throttle and the air speed quoted are used towards the end of the climb.

FIGURE 12 ENROUTE PERFORMANCE CEILING AND GROSS RATE OF CLIMB



SECTION V. PERFORMANCE (continued)

G. Landing Procedures and Speeds

1. LANDING TECHNIQUE

For the approach and landing refer to pages 49, 50 and 51.

2. MAXIMUM CROSSWIND COMPONENT

The maximum crosswind component in which the aeroplane has been demonstrated to be safe for take-off and landing is 17 Knots (20 MPH) at a tower height of 33 feet.

SECTION V. PERFORMANCE (continued)

H. Landing Field Lengths

1. LANDING DISTANCE REQUIRED - FIGURE 13.

The total landing distance over a 50 ft. obstacle is shown in Figure 13 for varying air temperatures, aerodrome altitudes, weights, reported wind components and uniform runway slopes.

ASSOCIATED CONDITIONS:

Engine	Idling
Wing Flaps	40° (Fully Deflected)
Technique	Approach at an airspeed of 73 MPH-I.A.S., 63 Knots, (75 MPH-E.A.S., 65 Knots). The flaps are retracted after touchdown and maximum wheel braking is applied.
Runway	Dry Tarmac Runway (See Note 2).

ILLUSTRATED EXAMPLE:

The example given by the arrowed dashed line shows that at the sea level aerodrome altitude with an air temperature of 32°C (I.S.A. + 17°C, 90°F) at a weight of 2000 pounds (907 Kgs.), with a reported headwind component of 10 Knots and a uniform downhill runway slope of 1.0%, the total landing distance over a 50 foot obstacle is 1250 feet (381 metres).

NOTES:

(1) The landing distance over 50 feet includes the Air Navigation Regulation field length factor 1.43. This means that distances obtained from Figure 13 may be equated directly to the landing distance available.

SECTION V. PERFORMANCE (continued)

(2) For operations from dry grass runways with freshly cut grass and firm subsoil, the distances for a dry tarmac runway should be increased by 8%.

(3) The wind grids are factored so that 50% of headwinds and 150% of tailwinds are obtained. Reported winds may, therefore, be used directly in the grids.

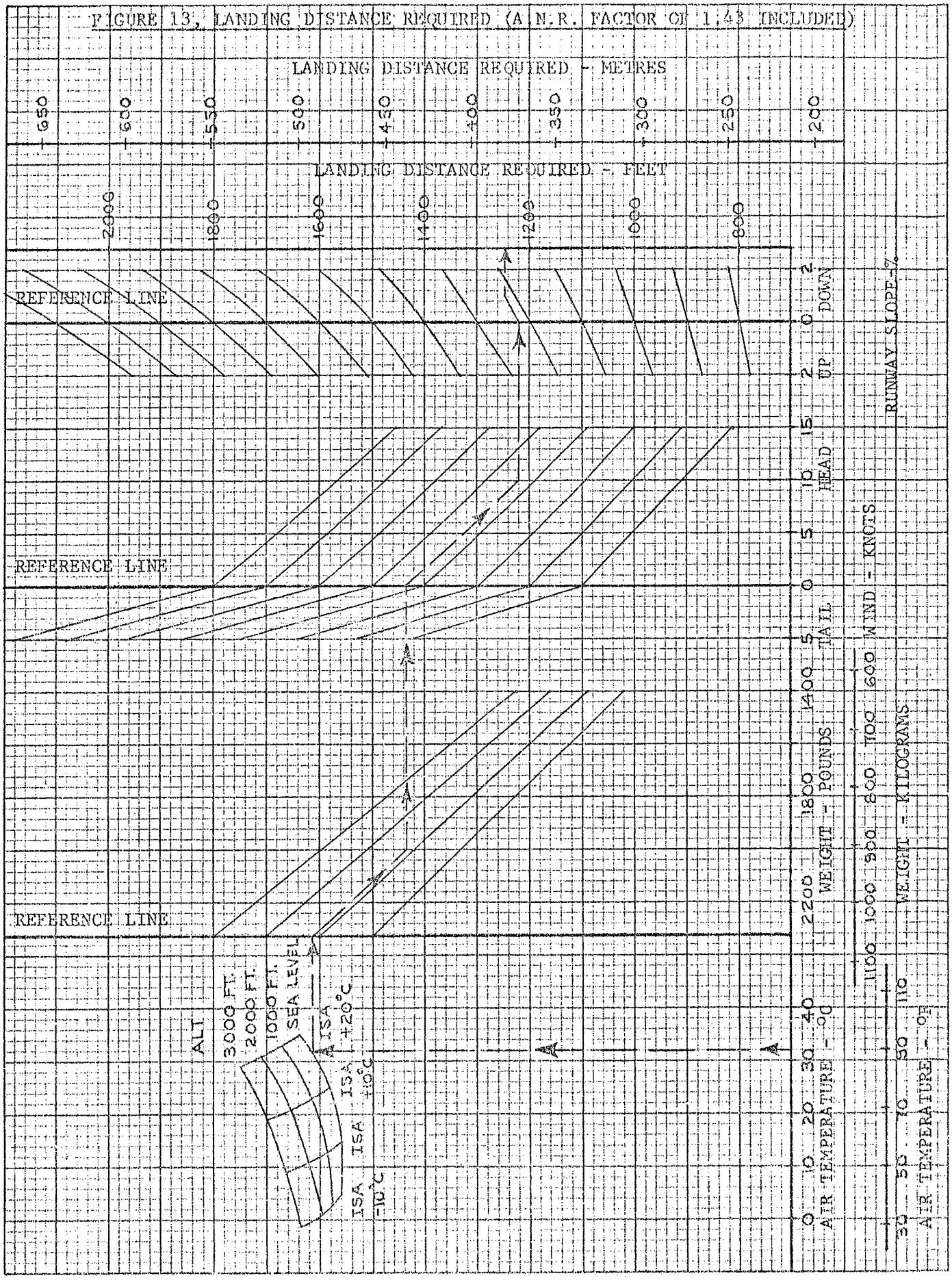


FIGURE 13. LANDING DISTANCE REQUIRED (A.N.R. FACTOR OF 1.43 INCLUDED)

SECTION V. PERFORMANCE (continued)

I. Net Glide Range

The horizontal glide range from any altitude is shown in Figure 14, for the aeroplane at a gross weight of 2325 pounds and a no wind condition.

ASSOCIATED CONDITIONS

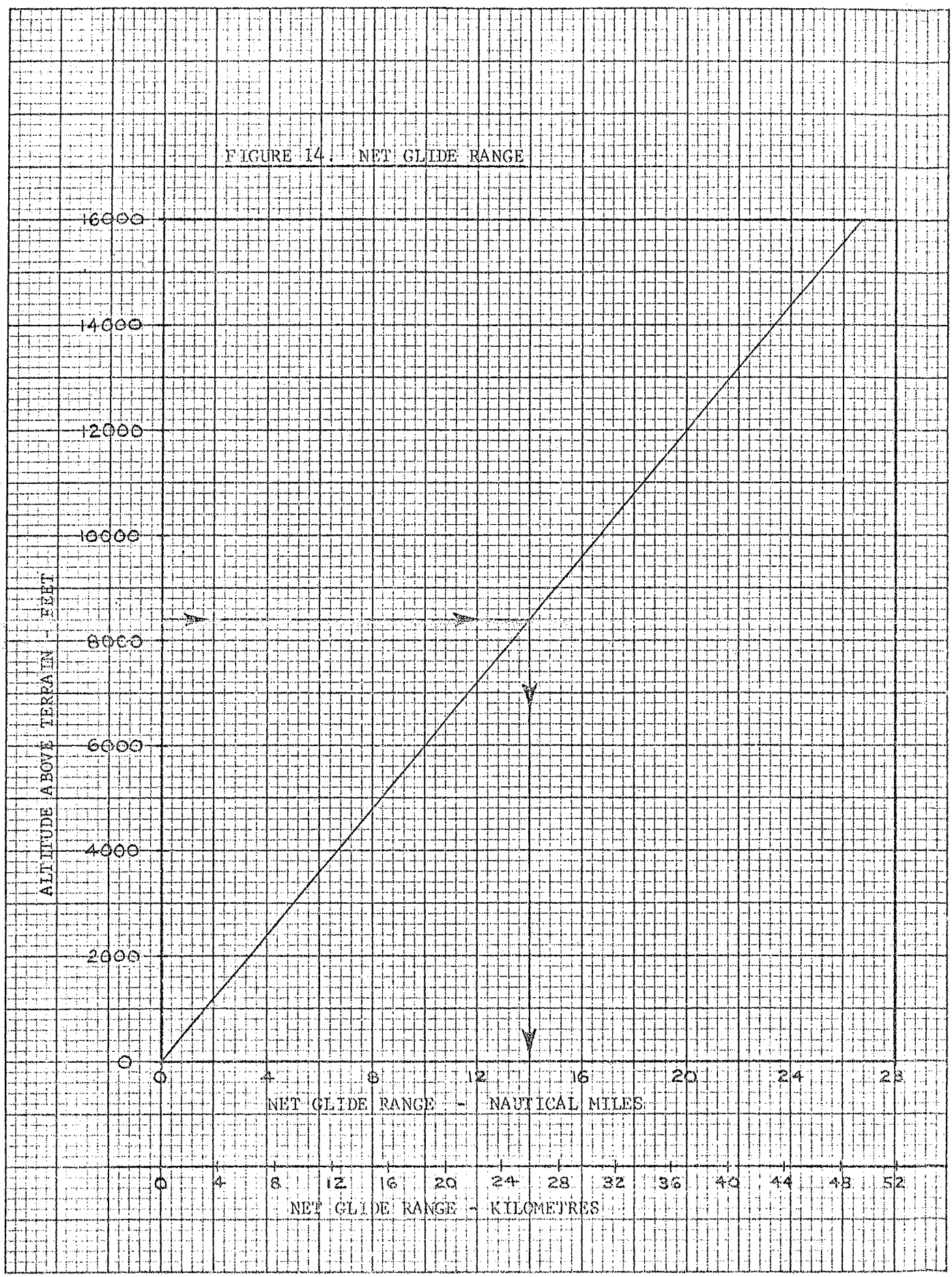
Engine	Power off, propeller windmilling
Wing Flaps	Retracted
Airspeed	83 MPH-I.A.S., 72 Knots, (85 MPH-E.A.S., 74 Knots)

The example given by the arrowed dashed lines shows that at an altitude above the terrain of 8400 feet, the net glide range for a no-wind condition is 14 nautical miles (26 Kilometres).

NOTES:

(1) The net glide range has a 1% steeper gradient than the gross glide range.

FIGURE 14. NET GLIDE RANGE



SECTION VI. SUPPLEMENTS

A. This section of the manual contains, in the form of supplements, information applicable to any particular feature, such as optional equipment, and uses of the aeroplane which are not covered by the information and data already included in the flight manual.

B. Only the supplements pertinent to the individual aeroplane, listed on page 80 need to be included in this manual and the date of embodiment recorded on the Record of Supplements sheet.

C. A supplement is identified by a number which is assigned to each complete supplement and recorded at the beginning of the individual presentation and on the Record of Supplements sheet.

D. The Record of Supplements sheet is presented on page 80 of this report.

E. It is recommended that amendments to Supplements be usually effected by a re-issue of the complete Supplement.

F. The amendments will be indicated on the Record of Supplements sheet in the Supplement Title column by listing the title and amendment, or revision, number.

G. Every copy of Report VB-575 should contain the latest revised copies of the Record of Supplements sheet and the Supplement System explanatory page.

ORIGINAL

RECORD OF SUPPLEMENTS

The following list of supplements have been approved by the Secretary of the Civil Aviation Authority and embodied in this manual.

SUPPLEMENT NUMBER	NAME OF CONSTRUCTOR	SUPPLEMENT TITLE	DATE OF APPROVAL			DATE OF EMBODIMENT			AUTHORIZED SIGNATURE OF EMBODIMENT
			Day	Mo.	Yr.	Day	Mo.	Yr.	
1	Piper Air-Craft Corp.	Electric Pitch Trim Installation							
2	Piper Air-Craft Corp.	Auto Control III Installation							
3	Piper Air-Craft Corp.	Autoflite II Installation							

ELECTRIC PITCH TRIM INSTALLATION

SECTION VI. SUPPLEMENTS (continued)

A. Limitations

The minimum height above the terrain for operation of the electric pitch trim is 400 feet.

B. Procedures

1. Preflight

(a) Circuit Breaker - Set

(b) Trim fore and aft

(c) Manually override electric pitch trim

(d) Check manual trim operation

(e) If trim system fails preflight, disengage electric pitch trim by pushing the pitch trim switch on the instrument panel to the "OFF" position. If the electric pitch trim does not disengage, have system repaired before flight.

2. Inflight

(a) Press the electric pitch trim switch fore and aft as required for trim.

C. Emergency Operation

1. In case of malfunction (runaway trim action) -

Disengage the electric trim system by pressing the push button switch on the instrument panel to the "OFF" position.

2. In emergency -

The electric pitch trim may be overpowered using the manual pitch trim.

ELECTRIC PITCH TRIM INSTALLATION

SECTION VI. SUPPLEMENTS (continued)

3. In the cruise configuration, malfunction results in 10° pitch change and 200 feet altitude variation.

4. In the approach configuration, a malfunction can result in a 5° pitch change and 50 feet altitude loss.

C. Performance

The aeroplane performance remains unchanged.

ORIGINAL

AUTOCONTROL III INSTALLATION

SECTION VI. SUPPLEMENTS (continued)

A. Limitations

1. Autopilot use is prohibited above 178 MPH-I.A.S. (155 knots).
2. Auto-Control III must be "OFF" for takeoff and landing.
3. The minimum height above the terrain for operation of the Auto-Control III is 640 feet.

B. Procedures

1. Normal Operation -

Refer to the current Auto-Control III Owner's Handbook.

C. Emergency Operation

1. In case of malfunction, turn "OFF" autopilot.
2. In emergency, autopilot may be overpowered manually.
3. In climb, cruise or descending flight, an autopilot runaway with a 3 second delay could result in 60° bank and 320 feet altitude loss.
4. In the approach configuration, an autopilot runaway with a 1 second delay, coupled or uncoupled, could result in 15° bank and 20 feet altitude loss.

D. Performance

The aeroplane performance remains unchanged.

AUTOFLITE II INSTALLATION

SECTION VI. SUPPLEMENTS (continued)

A. Limitations

1. Autopilot use is prohibited above 178 MPH-I.A.S. (155 knots).
2. Autoflite II must be "OFF" for take-off and landing.
3. The minimum height above terrain for operation of the "Autoflite II" is 640 feet.

B. Procedures

1. Normal Operation -

Refer to current Autoflite II Owner's Handbook.

C. Emergency Operation

1. In case of malfunction, press disconnect switch (located on the pilot's control wheel).
2. Move the switch (located on the control panel) to the "OFF" position.
3. Autoflite II may be overpowered manually.
4. In climb, cruise or descending flight, an autopilot runaway, with a 3 second delay could result in 60° bank and 320 feet altitude loss.
5. In the approach configuration, an autopilot runaway with a 1 second delay, coupled or uncoupled, could result in a 15° bank and 40 feet altitude loss.

D. Performance

The aeroplane performance remains unchanged.