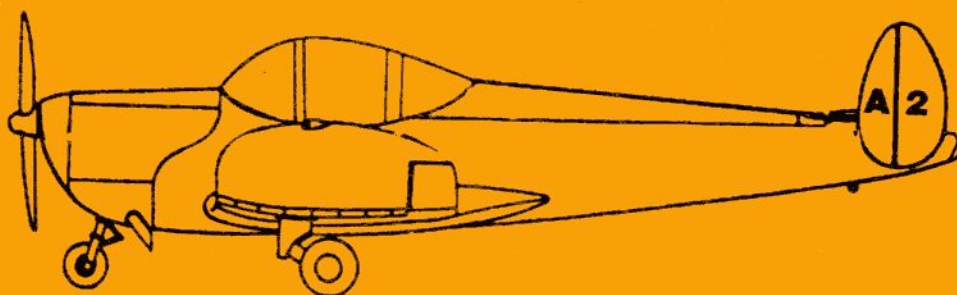


ALON-A2 FLIGHT MANUAL



UNIVAIR®

UNIVAIR AIRCRAFT CORP.
2500 Himalaya Road, Aurora, Colorado 80011
(303) 364-7661 or Telex; 317327

4-00001A

AIRCOUPE REPORT NO.

AIRCOUPE
Model A2

APPROVED AIRPLANE FLIGHT MANUAL
FOR THE "AIRCOUPE"
MODEL A2

PREPARED IN ACCORDANCE WITH BRITISH CIVIL AIRWORTHINESS
REQUIREMENTS - PERFORMANCE GROUP "D"

PREPARED AND SUBMITTED BY:
ALON, INC., ENGINEERING DEPT.
MUNICIPAL AIRPORT
McPHERSON, KANSAS

Export Airplane Serial Number _____
 Certification Number _____

APPROVED

FLIGHT MANUAL

for the

AIRCOUPE MODEL

A2

IDENTIFICATION NUMBER



(Signed) J. F. Allen
President

ALON, INC.
MUNICIPAL AIRPORT
McPHERSON, KANSAS

Approved _____

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SECTION II	DESCRIPTION
SECTION III	LIMITATIONS
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SECTION V	PERFORMANCE
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SECTION I

INTRODUCTION

PREFACE

This flight manual applies only to the airplane having the Constructor's Serial Number _____ and it is the responsibility of the flight crew operating the aircraft to be familiar with the contents of the manual, INCLUDING ALL AMENDMENTS at the time of flight.

The amendment state of this manual is given on the amendment list record sheets.

Amendments to the Flight Manual of aircraft registered in the United Kingdom are incorporated on the authority of the Ministry of Aviation. No changes may be made to this manual by any person unless authorized by a representative of the Air Registration Board on behalf of the Ministry of Aviation.

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REGISTRATION PARTICULARS

"AIRCOUPE"

MODEL A2

NATIONALITY AND REGISTRATION MARKS

CONSTRUCTORS SERIAL NO. _____

CONSTRUCTED BY:

ALON, INC.
MUNICIPAL AIRPORT
McPHERSON, KANSAS

CONSTRUCTED IN THE YEAR 19_____
AT: McPHERSON, KANSAS
USA

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SECTION II

DESCRIPTION

SPECIAL CONDITIONS OF FLIGHT

Icing Conditions
(See Section III)

CLIMATIC CONDITIONS

The operating suitability of the airplane has been established for temperatures up to the range defined by the I. C. A. O. Temperate and Arctic Maximum atmosphere (I. S. A. plus 15°C). This temperature range is shown in Figure 2-1 on Page 9 of this manual.

No minimum temperature range has yet been established.

AIRPLANE PARTICULARS

Class

Landplane - Low wing monoplane

Engine

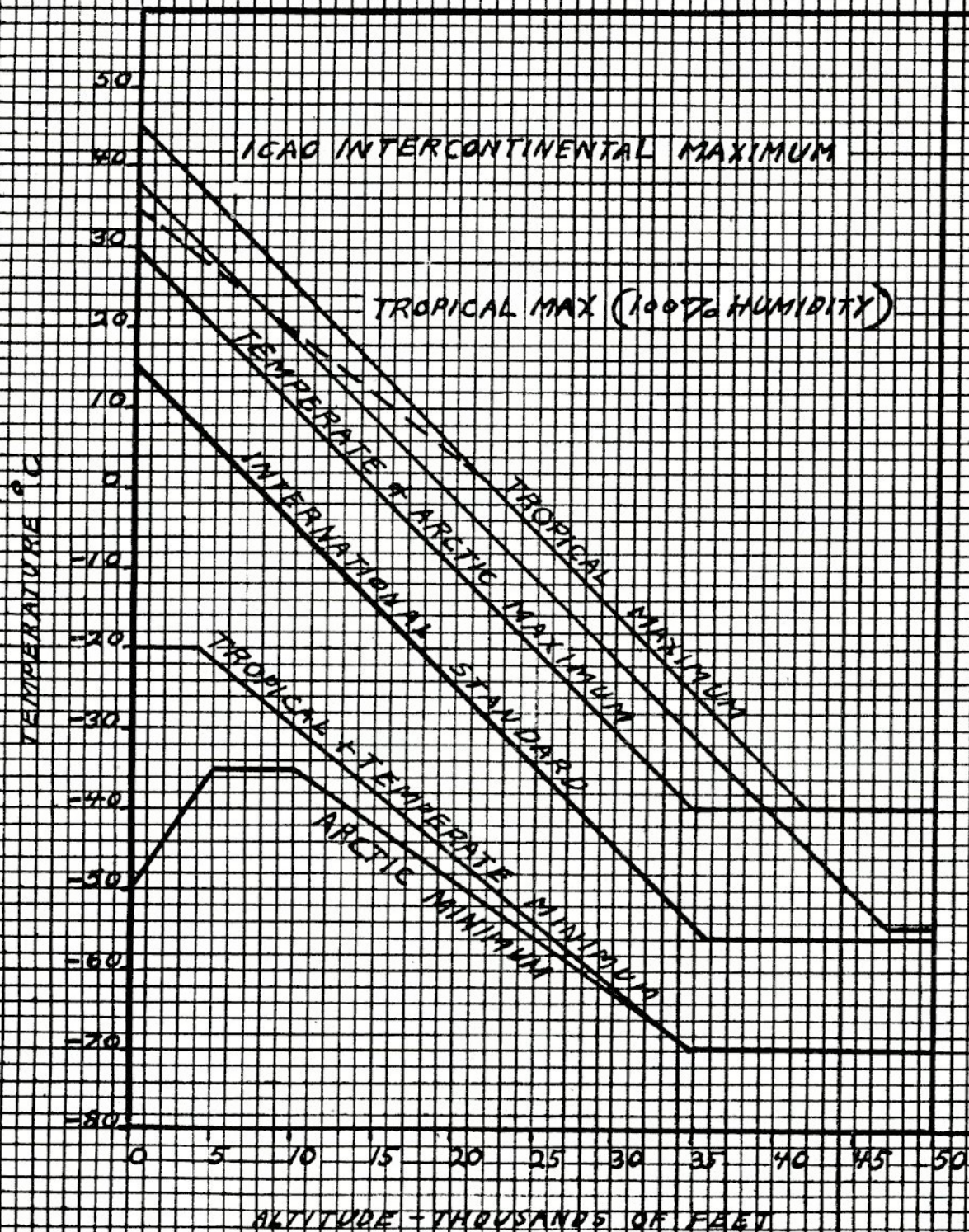
Number One
Manufacturer Continental Motors Corporation
Type C90-16F

Propeller

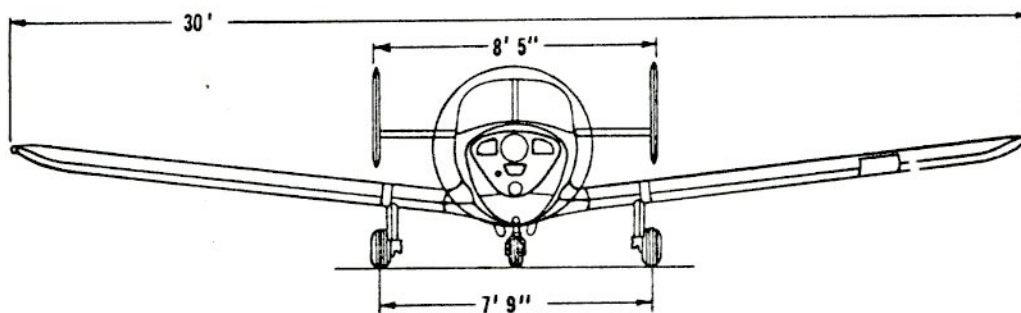
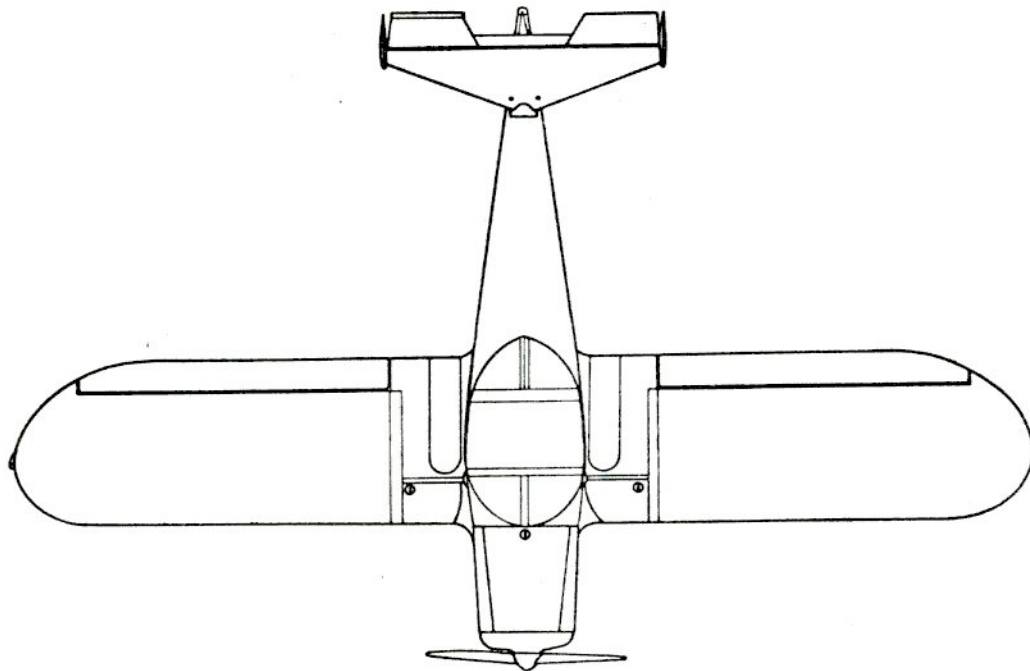
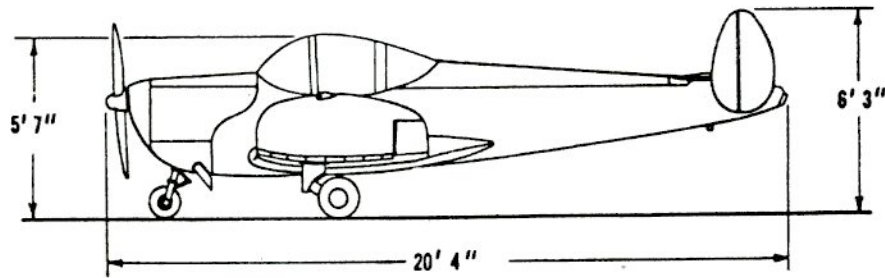
Manufacturer McCauley
Type 1B90CM or 1A90CF (2 bladed metal)
or other approved type
Diameter 5'11" feet (71 inches)
Pitch 4'2" feet (50 inches)

Leading Dimensions

Figure 2-2 on Page 10 is a three-view general arrangement drawing, and associated dimensions are shown on Page II.



STANDARD ATMOSPHERES



Outline Drawing Aircoupe Model A2

Date: 7-15-65

Alon, Inc.

Drawn: R. Mark

Municipal Airport

McPherson, Kansas

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LEADING PARTICULARS

AREAS

WING (TOTAL)	142.6 Sq. Feet
AILERONS (Aft of hinge)	16.8 Sq. Feet
TAILPLANE (Including elevator)	19.8 Sq. Feet
ELEVATOR (aft of hinge)	9.6 Sq. Feet
FINS (2 off including rudders)	9.3 Sq. Feet
RUDDERS (2 off aft of hinge)	6.0 Sq. Feet

MISCELLANEOUS

STANDARD MEAN CHORD (WING)	5.0 Feet
WING SPAN	30.0 Feet
LENGTH OVERALL	20.3 Feet
MAXIMUM HEIGHT	6.3 Feet

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MAXIMUM NUMBER OF SEATS

The maximum number of seats authorized to be fitted including seats for the crew is TWO
The limitation relating to the maximum number of occupants is given in the miscellaneous limitations in Section III of this manual.

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SECTION III

LIMITATIONS

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

CATEGORY:

The aeroplane is certified in the Transport Category (Passenger)

MANOEUVRES:

The maximum positive accelerations which the structure has been designed to withstand permanent deformation is 3.8g at 1450 lbs. Intentional manoeuvres shall be confined to those with Load Factors below this maximum value.

No aerobatic manoeuvres are approved.

AIRSPPEED LIMITATIONS:

*NEVER EXCEED SPEED. The never exceed speed is an airspeed indicator reading of 144 miles per hour. (126 Knots.)

NORMAL OPERATING LIMIT SPEED. During normal cruising flight, the aeroplane shall not be flown at a speed greater than an airspeed indicator reading of 114 miles a per hour. (99 Knots.)

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 flight and atmospheric conditions.

MANOEUVRING SPEED. No manoeuvres shall be carried out at an airspeed indicator reading in excess of 108 miles per hour (93 Knots.)

AIRSPPEED INDICATOR COLOUR MARKINGS:

Normal speed range.	58 m. p. h. to 114 m. p. h. IAS.	(Green Arc)
Caution range	114 m. p. h. to 144 m. p. h. IAS.	(Yellow Arc)
Never exceed speed	* to 144 m. p. h. IAS.	(Red Radial line)

Certain of these limitations are shown in the table of Principal Limitations at the end of this section.

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POWER PLANT LIMITATIONS

FUEL:

The minimum grade of fuel approved for use with this engine is:

80/87 Octane

OIL:

The oil approved for use with this engine is to Specification:

D. Eng. R. D. 2472 B/O

OIL TEMPERATURE:

Minimum for Take-off	75°F.
Maximum permitted	225F. (Red Radial Line)

OIL PRESSURE:

Minimum at idling speed	10 p. s. i. (Red radial line)
Cruising	30-40 p. s. i. (Green arc)
Caution range	10-20, 40-100 p. s. i. (Yellow arc)
Maximum permitted	100 p. s. i. (Red radial line)

ENGINE LIMITATIONS:

Normal rated R. P. M. 2475 R. P. M. (Red radial line)
The normal operating range is from 1900 to 2475 r. p. m. (Green arc)

USE OF MIXTURE CONTROL:

The mixture control is only to be used to maintain "Weakest mixture for maximum power" conditions when cruising at altitudes greater than 5,000 feet, or to avoid rough running due to over-richness in all other power conditions, and must not be used to cause a drop in engine speed.

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AIRFRAME LIMITATIONS:

WEIGHT:

The maximum permissible take-off and landing weight is 1450 lbs.

CENTRE OF GRAVITY:

The load is to be distributed so that the centre of gravity lies always between 26.4 inches and 30.3 inches aft of the front face of the firewall, which is 15.75 inches forward of the leading edge.

BAGGAGE SHELF:

The maximum permissible baggage load on the shelf is not to exceed 75 lbs, evenly distributed.

MISCELLANEOUS LIMITATIONS:

MINIMUM CREW:

The minimum crew is ONE pilot.

NUMBER OF OCCUPANTS:

The number of persons carried must not in any circumstances exceed the number of seats stated on Page 12, nor exceed that for which seating accommodation approved by the Minister of Aviation is provided, except that infants under the age of 3 years carried in the arms of passengers may be left out of account for this purpose.

FLIGHT BY NIGHT:

The aircraft may only be flown at night when properly equipped in accordance with the Air Navigation Order (1960)

FLIGHT IN ICING CONDITIONS:

The Aircraft is not approved for flight in icing conditions.

PLACARDS:

Such notices as are required to be placarded shall be visibly displayed.

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* TABLE OF PRINCIPAL LIMITATIONS

AIRSPPEED I. A. S.

Never exceed	144 m. p. h. (126 Knots)	Red radial line
Normal operating	114 m. p. h. (99 Knots)	
Manoeuvring	108 m. p. h. (93 Knots)	

POWER PLANT

Maximum rotational speed for all conditions of flight	2475 R. P. M. Red Radial Line
Normal Oil Pressure	30-40 lbs. sq. ins.
Minimum safe Oil Pressure at idling	10 lbs. sq. ins.
Minimal Oil Temperature for opening from cold	75° F.
Maximum Oil Temperature	225° F

WEIGHT:

Maximum take-off and landing weight.	1450 lbs.
--------------------------------------	-----------

CENTRE OF GRAVITY:

Forward Limit	26.4 inches aft of datum as defined on Page 16.
Aft limit	30.3 inches aft of datum as defined on Page 16.

* The full wording of these limitations and other limitations not given in this table are given in the preceding pages.

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SECTION IV

H A N D L I N G

MAXIMUM CROSSWIND COMPONENT

The maximum crosswind component in which the aeroplane has been demonstrated to be safe for take-off and landing is 20 knots at a height of 10 meters.

HANDLING ON ROUGH GROUND

The aeroplane has been demonstrated to be safe when operating from rough grass surfaces.

TAKE OFF TECHNIQUE

For Take-off, adjust the trim tab control for full nose up. The Shortest take-off is ordinarily obtained by holding the control wheel fully back through the entire take-off run. The tail will not come down until flying speed has been attained, and unstick should not occur before 50 m. p. h. I. A. S. with aft C of G or 55 m. p. h. I. A. S. with forward C of G.

The Control wheel should be eased forward after the airplane leaves the ground to keep the airplane from nosing up too sharply, and to achieve the Take-off safety speed of 65 m. p. h. I. A. S. at 50 feet.

BALKED LANDING.

In the event of a balked landing, application of Full Throttle has very little effect on the trim change, the control forces being very light.

STABILITY

The airplane is stable about all three axes.

RUDDER CONTROL

Having relatively small rudders, the Aircoupe will not slip as fast as other airplanes with large vertical tail surfaces, but the Aircoupe will slip sufficiently to give good altitude control for landing approaches. On landing, after contact with the ground, the nose wheel should be held on the ground since the rudders are relatively ineffective at this speed, and will not maintain directional stability at lower speeds.

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H A N D L I N G

STALLING:

GENERAL

There is no warning of the approach to the stall apart from gradually less effective aileron control. The aircraft under most conditions does not fully stall. A certain amount of fore and aft pitching will take place except at the aft C of G, when a stall will occur with a gentle nose drop, and there is no tendency to drop a wing.

STALLING SPEEDS

The ability to stall depends on the speed with which the nose is raised and the amount of power used. Due to the fact that the aircraft cannot be stalled in the normal condition, no stalling graph is shown, but the minimum flying speed is approx: 40 m.p.h. I. A. S.

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SECTION V PERFORMANCE

THIS AIRPLANE IS CLASSIFIED IN PERFORMANCE GROUP D

GENERAL:

CONDITIONS OF AIRPLANE

The performance information in this section relates to an airplane in the following standard conditions.

ENGINE

PROPELLER

Continental C90-16F

McCauley 1B90CM or 1A90CF

Note: The performance information is no longer valid if a propeller of another approved type, but having different diameter & pitch is fitted.

None Fitted

AIRFRAME DE-ICING

EXTERNAL MODIFICATION

None

RADIO AERIALS

1 Set VOR. 1 VHF Whip. 2 M. F. Wires from Cabin to fins

AIRSPEEDS:

Speeds upon the basis of which this performance information was obtained are given in Section III and IV. When the airspeed is given in terms of I. A. S. (i. e. a reading on an instrument with no instrument error) and the error (which is always small) of a particular instrument is not known, the actual instrument reading (i. e. A. S. I. R.) may be used.

STANDARD ATMOSPHERE

The international Standard Atmosphere (I. S. A.) is defined in Figure 2-1 on Page 9 of this manual.

COMPLIANCE WITH AIR NAVIGATION (GENERAL) REGULATIONS

Performance Group - This airplane is classified in performance Group. "D"

DETERMINATION OF TEMPERATURE IN RELATION TO STANDARD

In order to convert a given temperature at a given altitude into degrees above International Standard Atmosphere (which is used throughout this section) the information in the Chart on Page 23 may be used.

The example given by the arrowed dotted line shows that a temperature of 11°C at an altitude of 8'000 feet is 12°C higher than the appropriate in the International Standard Atmosphere.

FLIGHT OVER WATER SPEED

The Speed to be assumed for the purpose of complying with the Air Navigation Order (1960) for flights over water is 105 M P. H. T. A. S.

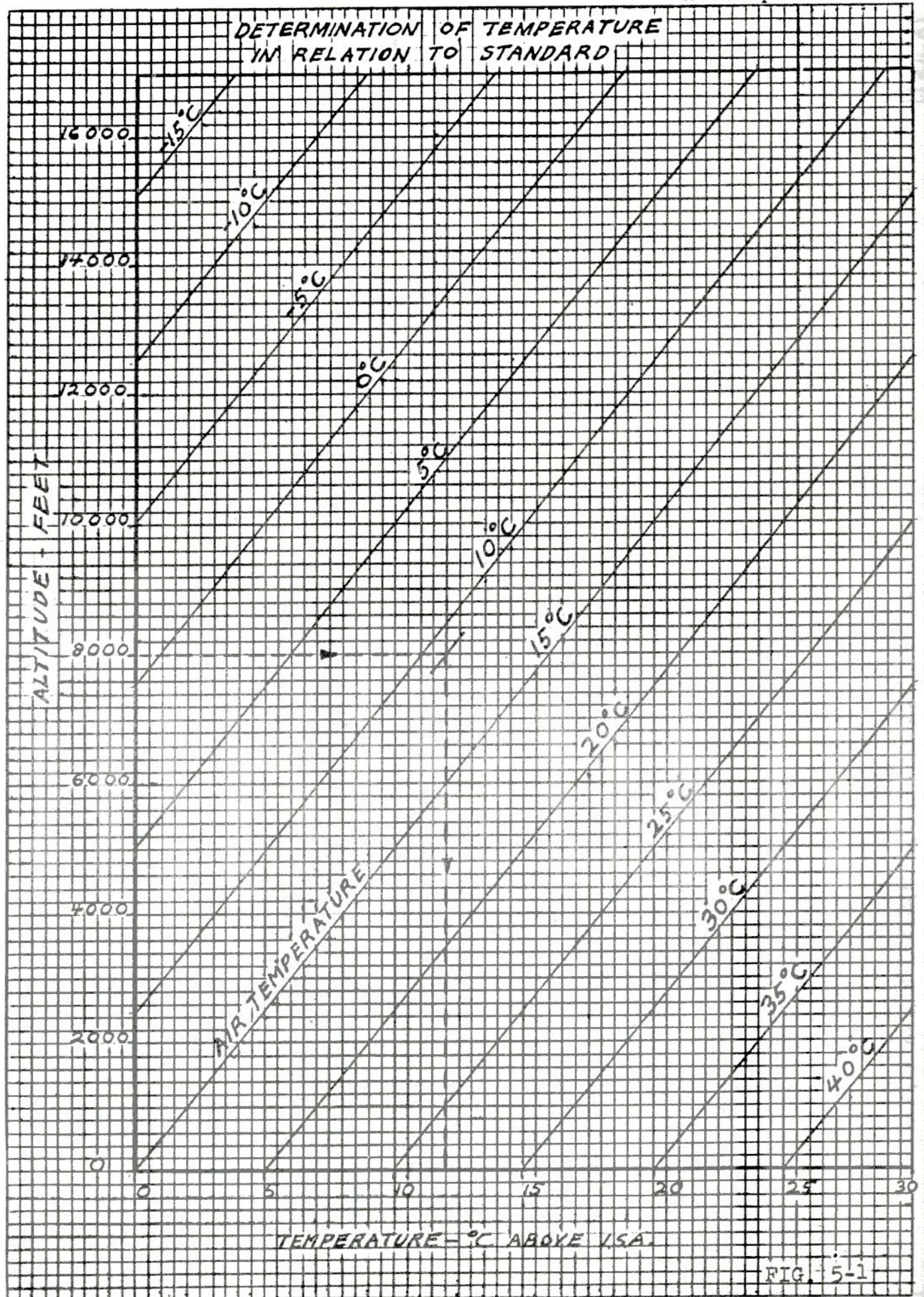


FIG. 15-1

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SECTION V

PERFORMANCE

GENERAL:

POSITION ERROR CORRECTION TO A.S. I:

The correction to be made to the I. A. S. (Indicated Airspeed) to obtain E. A. S. (Equivalent Airspeed) is given for values of I. A. S.

The correction applies only when the standard Pitot-Static Head is used.

ALTIMETER STATIC ERROR CORRECTION:

The Altimeter static error correction is negligible in all conditions.

POSITION ERROR CORRECTION TO I.A.S.

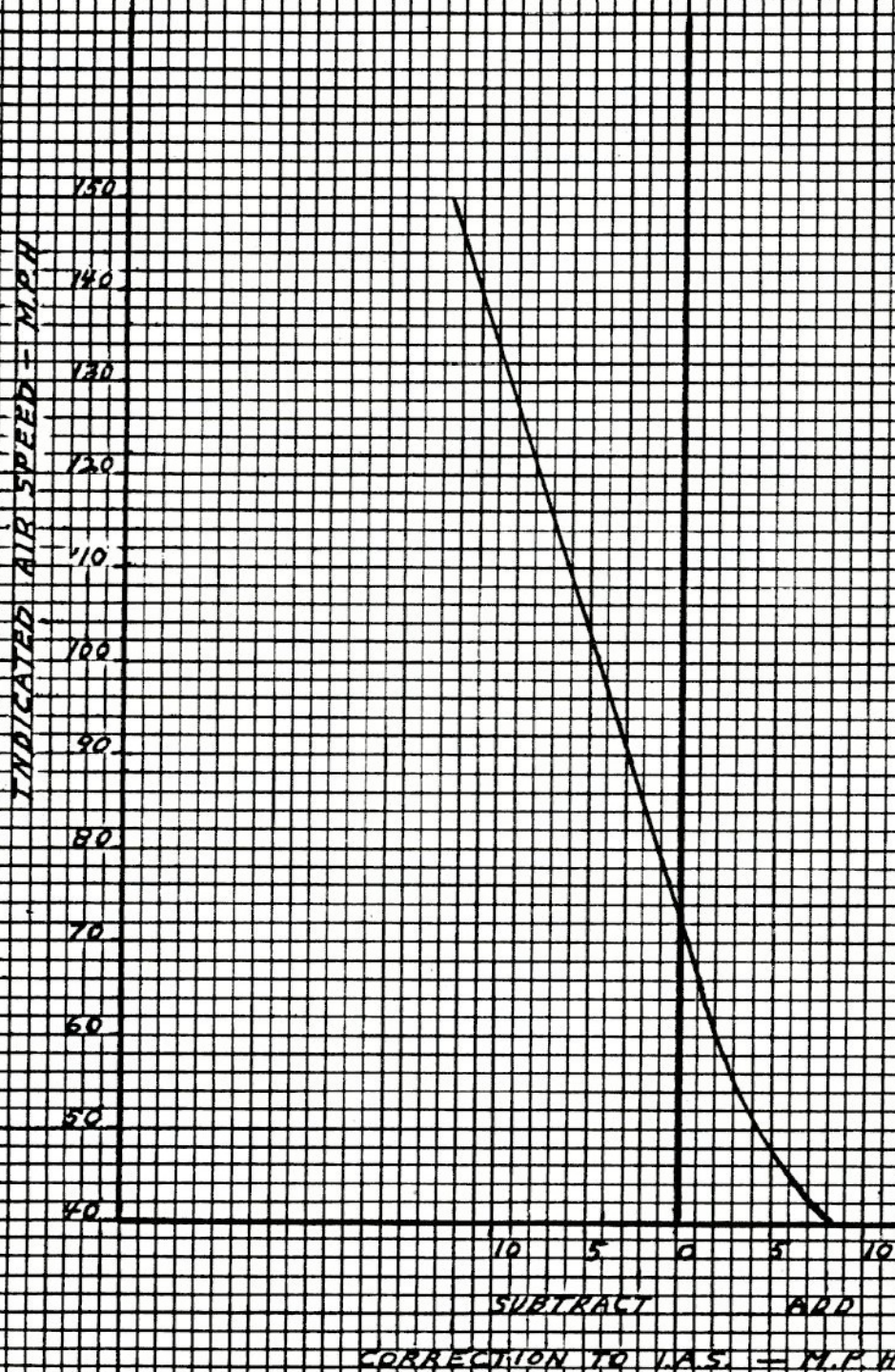


FIG. 5-2

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SECTION V
NET PERFORMANCE DATA

NET DATA:

The majority of the performance information scheduled (for example, the take-off distance required) is net data. This means that some margin has been included in the charts for the loss of performance due to various factors for which it is difficult to make an allowance operationally, such as small and unavoidable variations from the correct airspeed, and variations from the average airframe drag and engine powers etc. Where necessary, a note in the text indicates those charts which are not net data.

VALIDITY OF PERFORMANCE INFORMATION:

The Performance Information in this section is not valid if:

- (a.) The total loaded weight exceeds the relevant maximum permissible take off & landing weight appropriate to the altitude and temperature.
- (b.) The temperature exceeds the temperature of the maximum atmosphere for which operating suitability has been established (see Page 8.)
- (c.) The reading from the charts are obtained by extrapolation (ie. using values of parameters outside the range given on the charts) except as and when specifically permitted.

NOTE: When the temperature is below the range scheduled, the performance shall be assumed to be not greater than that obtained by using the temperature appropriate to the coldest atmosphere given on the charts being considered.

DEFINITIONS:

GRADIENT OF CLIMB:

For the purpose of constructing flight paths, this may be taken as the ratio expressed as a percentage-

$$\frac{\text{Change in Height}}{\text{Horizontal distance covered}} \text{--- during the period of time considered.}$$

HARD, DRY SURFACE:

A Take-off or Landing surface having a coefficient of rolling friction of about 0.025 (such as concrete or tarmacadam)

MAXIMUM TAKE-OFF & LANDING WEIGHT FOR ALTITUDE & TEMPERATURE:

See Figure 5-3 Page 27

MAXIMUM TAKE OFF AND LANDING
WEIGHT FOR ALTITUDE AND TEMPERATURE

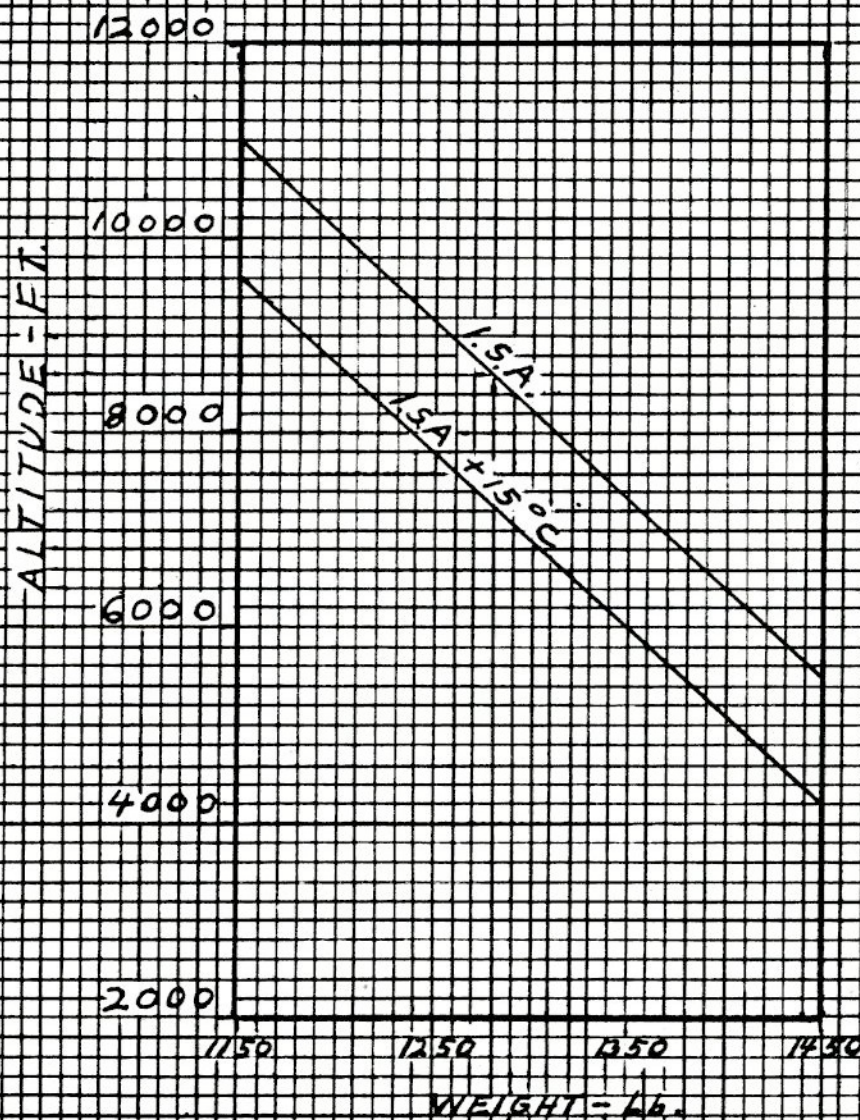


FIG. 6-3

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SECTION V

TAKE OFF RUN REQUIRED

The Take-off run required from rest to take-off safety speed is not scheduled but is always less than the take-off distance required.

TAKE OFF DISTANCE REQUIRED

The take-off distance required from rest to reach a height of 50 feet is shown on Figure 5-4 for varying weights, altitudes, temperatures and headwind components.

ASSOCIATED CONDITIONS:

POWER UNIT

Full Throttle

CARBURETTOR AIR INTAKE

Selected Cold Air

TECHNIQUE

As detailed on page 19 of this manual

RUNWAY

Hard, level dry surface

The example given by the arrowed dotted line shows that at an altitude of 1000 feet at a temperature of 20°C (I. S. A. plus 7°C) at a weight of 1450 lbs. and with a headwind component of 7 knots, the take-off distance required is 1550 feet.

NOTE:

- (1) The wind correction grid is unfactored. The reported wind will need to be factored as required in the relevant operating regulations to obtain the effective wind to be used in this chart. For example, with a factor of 50% to be applied, a reported headwind component of 10 knots would result in an effective wind of 5 knots to be used in the chart.

As the effect of tailwind component is not scheduled, the information given on Page 29 is not valid for a down wind take-off.

- (2) Correction for the effect of runway surface gradient and grass surfaces; the following table shows the amount by which the take-off distance required in Figure 5-4 is increased (a) for every 1% uniform uphill gradient and (b) when the take-off surface is grass.

% Increase per 1% uphill gradient, (Sea level to 3'000 feet) at 1300 lbs weight is 7% and at 1450 lbs weight 11%.

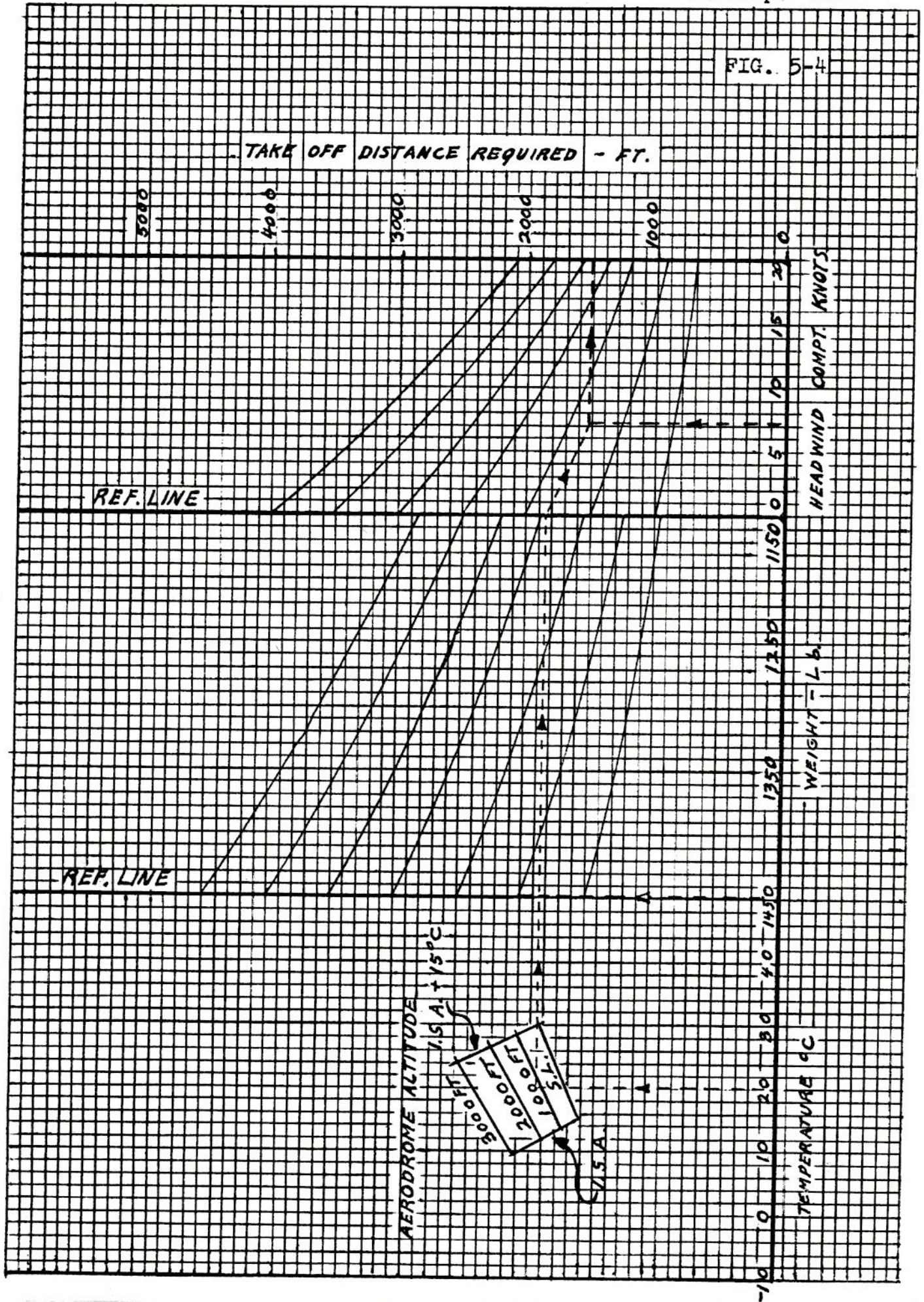
% Increase for grass surface, (Sea level to 3'000 feet) at 1300 lbs weight is 9% and at 1450 lbs weight 17%.

The correction for uphill gradients is not applicable for gradients exceeding 2% linear interpolation may be used.

As the effect of downhill surface gradient is not scheduled, the take-off distance appropriate to zero surface gradient is to be used when there is a downhill gradient.

FIG. 5-4

TAKE-OFF DISTANCE REQUIRED



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SECTION V

P E R F O R M A N C E

NET TAKE-OFF FLIGHT PATH - NET GRADIENT OF CLIMB

The Net take-off flight path gradient of climb is shown on Page Thirty-One Figure 5-5 for varying weights, altitudes and temperatures.

ASSOCIATED CONDITIONS:

POWER UNIT	Full Throttle
CARBURETOR AIR INTAKE	Selected Cold Air
AIRSPEED	65 m. p. h. I. A. S.

The example given by the arrowed dotted line shows that at an altitude of 1'000 feet, at a temperature of 20°C (I. S. A. plus 7°C) and at a weight of 1450 lbs, the net gradient of climb is 5.2%.

- NOTE:** (1) This information is given so that the ability of the airplane to clear any obstacles after take-off may be assessed.
- (2) The radius of a steady "rate one" turn (180°/minute) for the conditions given above is to be taken as 2'000 feet for all weights, altitudes and temperatures.

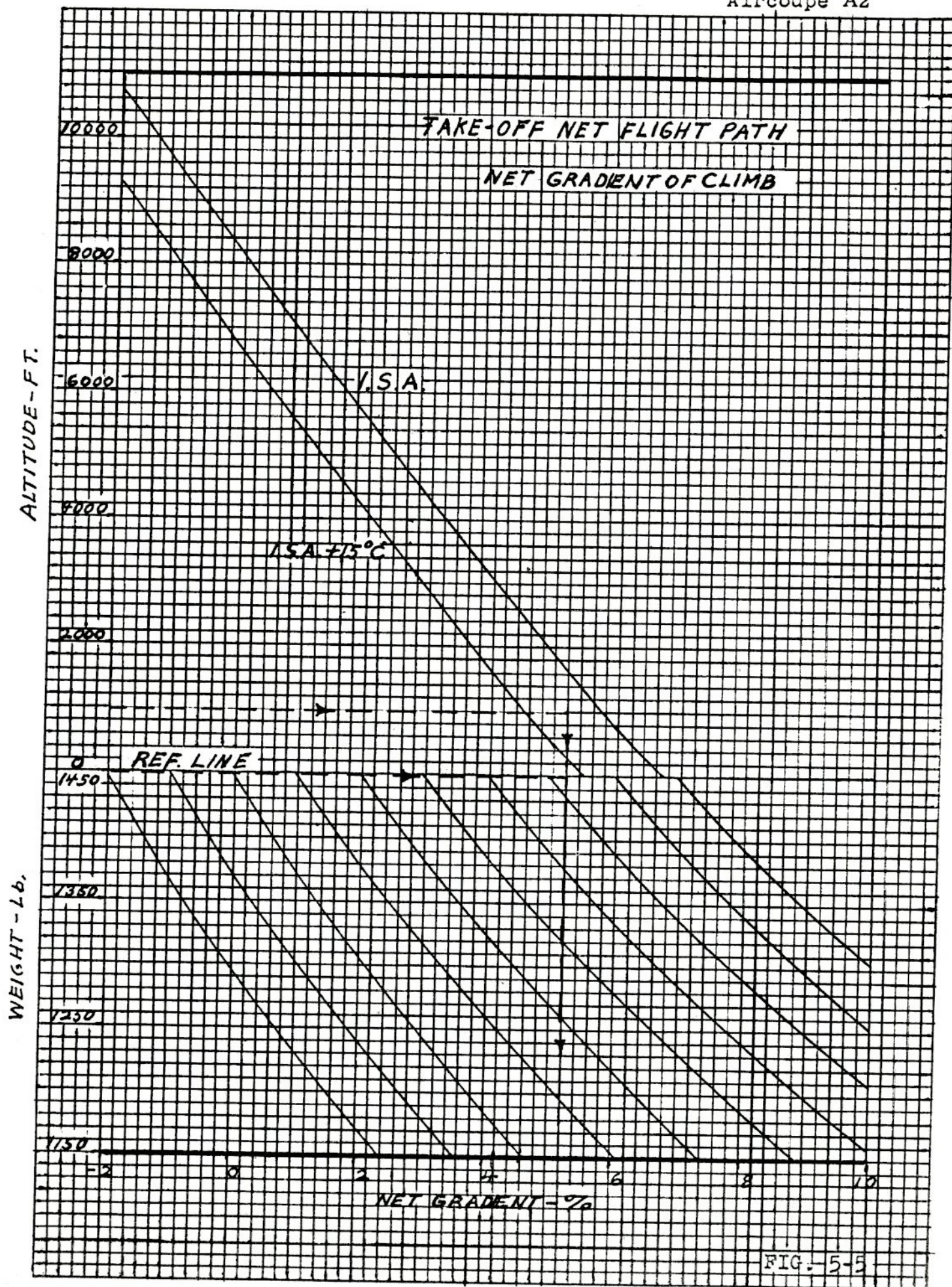


FIG. 5-5

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SECTION V P E R F O R M A N C E

PERFORMANCE CEILING

The performance ceiling is shown on Page thirty three figure 5-6 for varying weights and temperatures.

ASSOCIATED CONDITIONS:

POWER UNIT	Full Throttle
CARBURETOR AIR INTAKE	Selected Cold Air
AIRSPEED	70 m. p. h. I. A. S. at Sea Level, decreasing by 1 m. p. h. per 1'000 feet of altitude

The example given by the arrowed dotted line shows that at a weight of 1400 lbs and at a temperature of I. S. A. plus 8°C the performance ceiling is 8'000 feet.

NOTE:

This performance ceiling is not a limitation since it does not prohibit an airplane flying higher than the ceiling scheduled, although at some altitudes the operating regulations may require oxygen to be carried. The performance ceiling represents the maximum altitude which the airplane may be regularly relied upon to achieve, bearing in mind the adverse conditions likely to occur. In establishing compliance with that part of the operating regulations which refer to En Route flight, the calculations may not assume that the airplane is flying above the scheduled performance ceiling.

PERFORMANCE CEILING

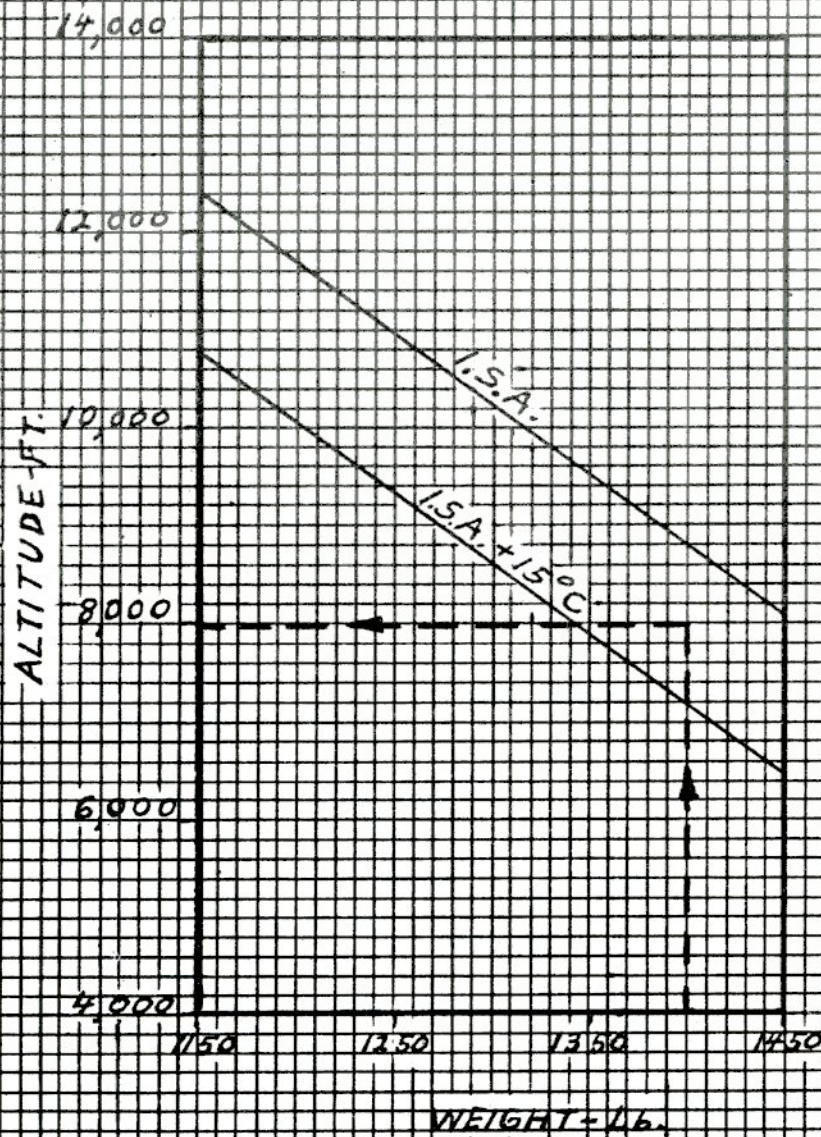


FIG. 5-6

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CHECKED BY				REPORT NUMBER	
APPROVED BY				LATEST REVISION	

SECTION V P E R F O R M A N C E

EN ROUTE GLIDE (POWER UNIT INOPERATIVE)

The Net and Gross Gradients of descent expressed as the horizontal distance covered to descent to sea level are shown for varying initial altitudes on Page 35.

ASSOCIATED CONDITIONS:

POWER UNIT
AIRSPEED
WIND

Inoperative
70 m.p.h. I. A. S.
Zero Wind Conditions

The example given by the arrowed dotted line shows that for a glide commencing at an altitude of 8'500 feet, the net gradient of descent is such that the horizontal distance covered during the glide to sea level is 11.5 nautical miles.

NOTE:

- (1) In establishing compliance with the appropriate operating regulations, the gross gradient scheduled opposite shall not be used, that part of the chart given for general information only.
- (2) To obtain the horizontal distance covered during a descent from one altitude to another (Not sea level), proceed -- illustrated in the following example:

To find the net horizontal distance covered during a descent from 8'500 feet to 2'500 feet in I. S. A.

(a) Distance to sea level from 8'500 feet =	11.5 Nautical Miles	
(b) Distance to sea level from 2'500 feet =	3.4 Nautical Miles	
Hence distance required is	8.1 Nautical Miles	

Glide
ratio
8.2/1

- (3) The effect of wind should be allowed for in the same way as in a normal navigational calculation.
- (4) The effect on the information given overleaf for variations in weight may be neglected.

EN ROUTE GLIDE
(POWER UNIT INOPERATIVE)

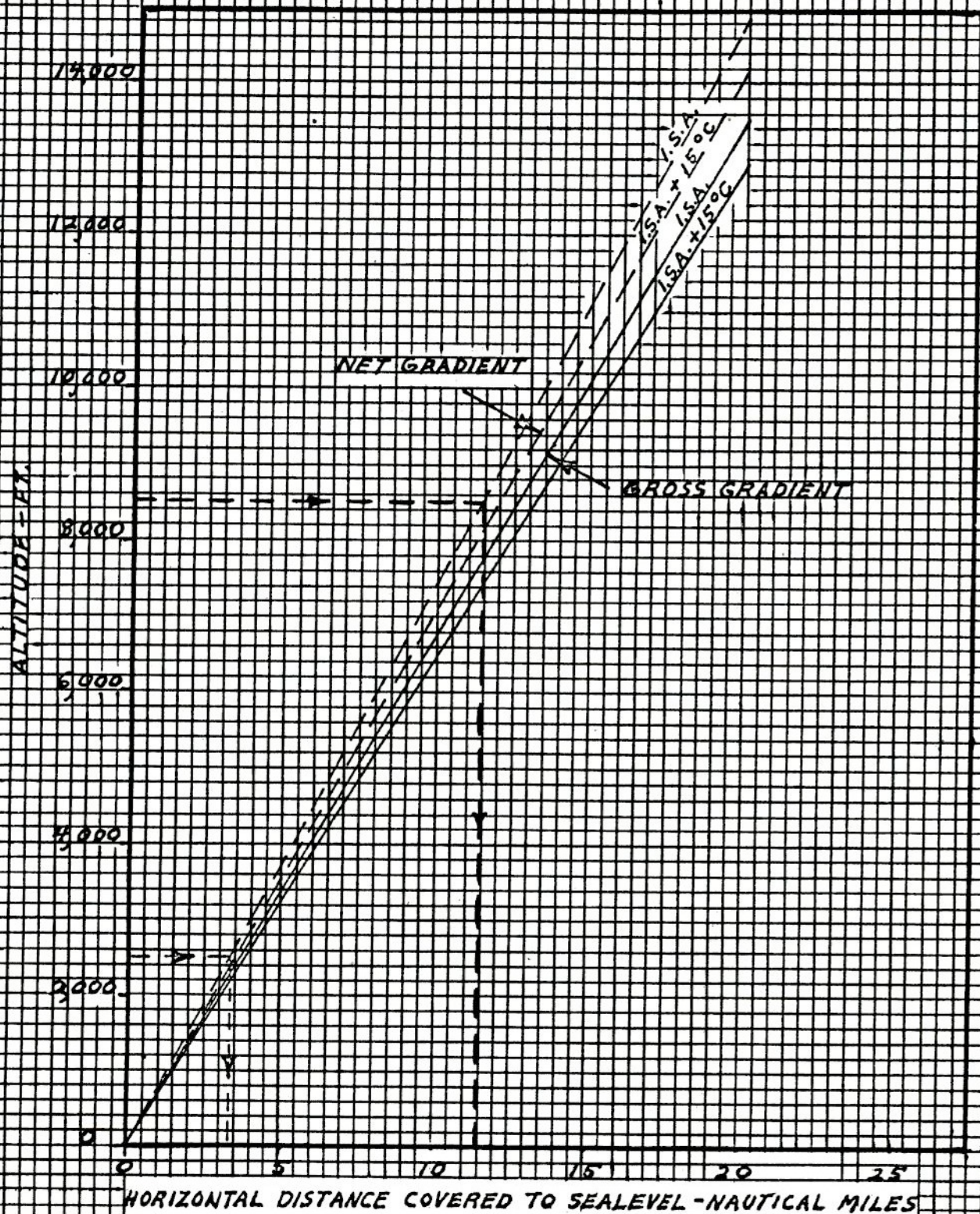


FIG. 5-7

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SECTION V P E R F O R M A N C E

LANDING DISTANCE:

The landing distance from a height of 50 feet to stop is shown on page 37 for varying weights, altitudes, temperatures and head wind components.

ASSOCIATED CONDITIONS:

POWER UNIT	Idling
AIRSPEED	65 m. p. h. I. A. S.
BRAKING	Normal
RUNWAY	Hard, level dry surface

The example given by the arrowed dotted line shows that at a temperature of 22°C (I. S. A. plus 7°C) at a weight of 1400 lbs and with a head wind component of 5 knots, the landing distance is 1240 feet.

- NOTE: (1.) This landing distance is "Gross data" i. e. unfactored. The factor to be applied to the landing distance available is given in the relevant operating regulations.
- (2) The wind correction grid is unfactored. The reported wind will need to be factored as required by the relevant operating regulations to obtain the effective wind to be used in this chart. For example, with a factor of 50% to be applied, a reported head wind component of 10 knots would result in an effective wind of 5 knots to be used in the chart. As the effect of tailwind component is not scheduled, the information given opposite is not valid for a downwind landing.
- (3) Correction for the effect of runway surface gradient, the landing distance is increased by uniform downhill surface gradient at the rate of 8% increase in distance per 1% downhill gradient. This correction is not applicable for gradients exceeding 2%

As the effect of uphill surface gradient is not scheduled, the landing distance appropriate to zero surface gradient is to be used when there is an uphill gradient.

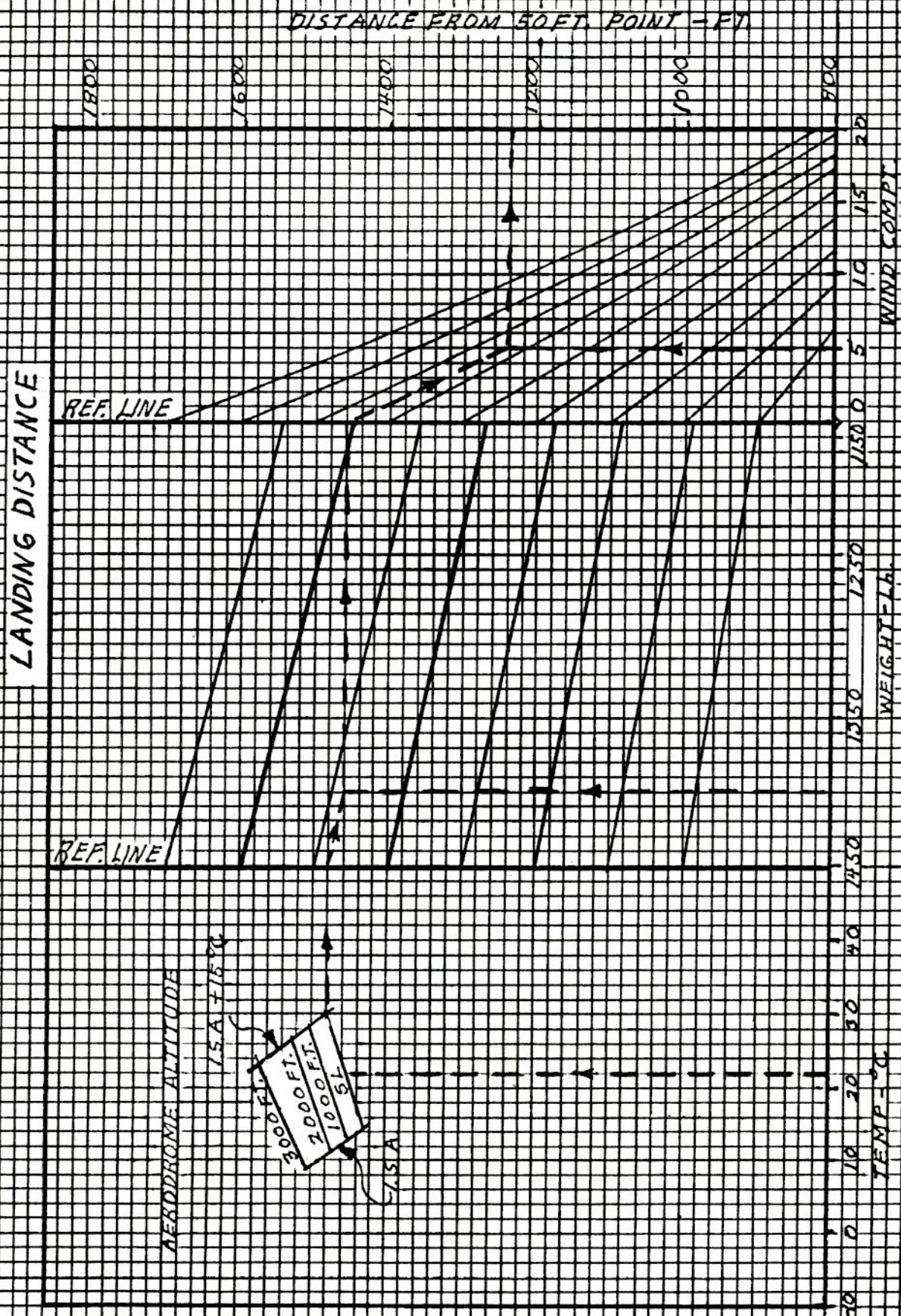


FIG. 5-8

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SECTION V P E R F O R M A N C E

APPENDIX A

GROSS PERFORMANCE DATA

This appendix contains additional performance which is given for general information and routine flight test purposes only, and is not to be used for establishing compliance with the Air Navigation (General) regulations. The performance scheduled is "Gross Data" that is to say, it is the expected performance of an average airplane of the type, and no margins have been subtracted.

EN ROUTE GROSS RATE OF CLIMB

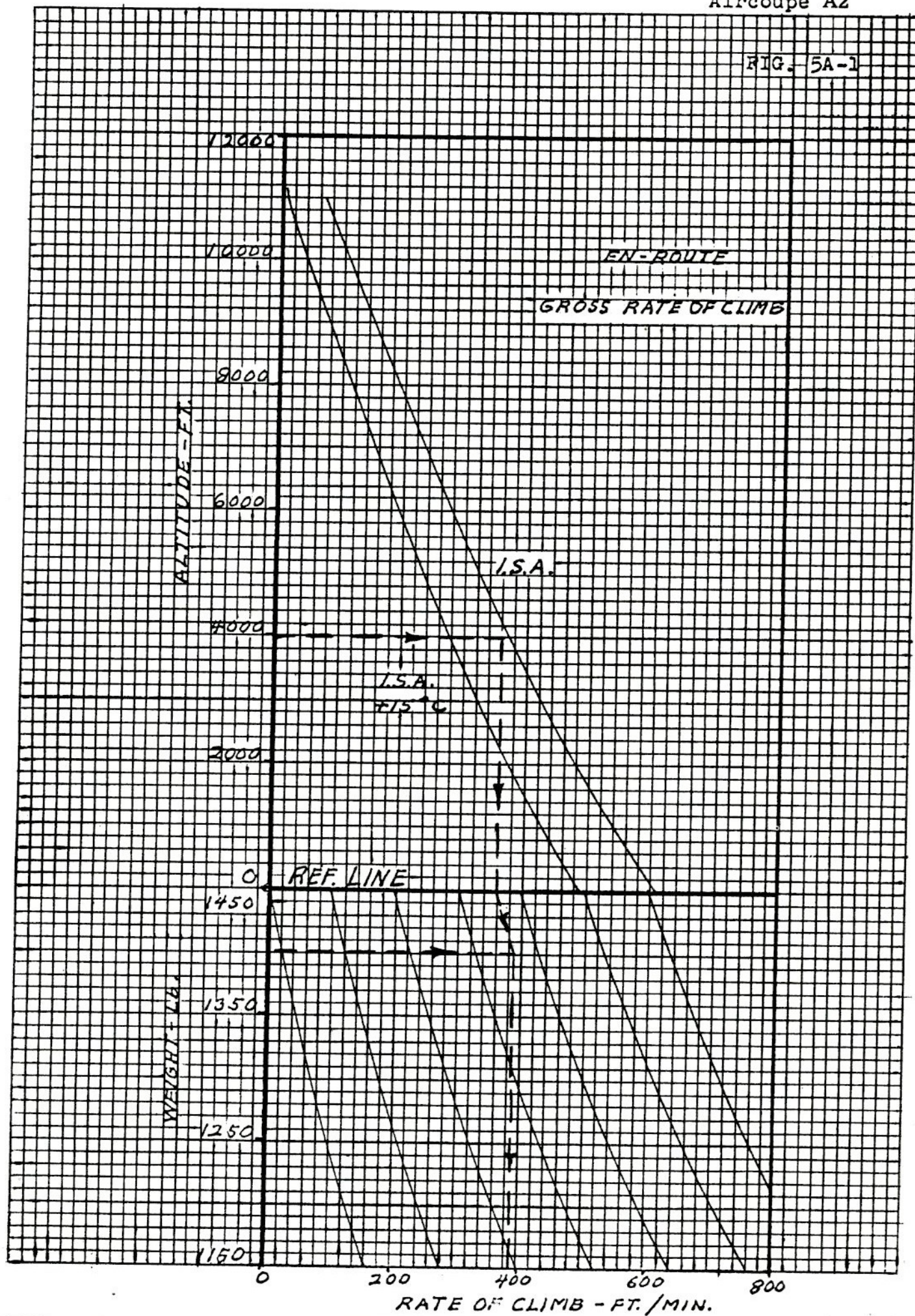
The Gross rate of climb is shown on Page 39 Figure 5A-1 for varying weights altitudes and temperatures:

ASSOCIATED CONDITIONS:

POWER UNIT	Full Throttle
CARBURETOR AIR INTAKE	Selected Cold Air
AIRSPEED	70 m. p. h. I. A. S. at Sea Level decreasing by 1 m. p. h. per 1'000 feet of altitude

The example given by the arrowed dotted line shows that at an altitude of 4'000 feet, at a temperature of 9°C (I. S. A. plus 2°C) and at a weight of 1400 lbs, the gross rate of climb is 390 feet per minute.

FIG. 5A-1



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SECTION VI

WEIGHT AND LOADING DATA

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Weight & Centre of Gravity Schedule	
Parts "A" and "B"	41
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SECTION VI
WEIGHT AND CENTRE OF GRAVITY SCHEDULE

PART "A" BASIC WEIGHT

The Basic Weight of the aircraft as calculated from weighing report No. _____ Dated _____ is _____ lbs.

The Centre of Gravity of the aircraft in the same condition at this weight and with the landing gear extended is _____ inches aft of the datum, which is defined on Page 16 of this manual.

The Basic Weight includes the weight of the total quantity of unusable fuel, and the weight of the following, which comprise the list of "Basic Equipment:

PART "B" VARIABLE LOAD:

The weight and lever arms (measured aft of the C. G. datum as defined on Page 16 of this manual) of the variable load which includes the weight of the crew and those items of equipment including usable fluids other than fuel which do not form part of the basic equipment are shown below. The variable load depends upon the role in which the aircraft is intended to be used.

ITEM	WEIGHT lbs.	LEVER ARM inches	MOMENT CHANGE lb. inches.
CREW - One member at 165 lb. per person	165	37	6105
.....			
TOTAL	165	37	6105
	=====	=====	=====

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SECTION VI
WEIGHT AND CENTRE OF GRAVITY SCHEDULE
PART "C" OPERATING (A. P. S.) WEIGHT

The operating (or aircraft prepared for service) weight (assuming all the variable load items are carried) is _____ lbs. The Centre of Gravity of the aircraft in the operating weight condition and with the landing gear extended is _____ inches aft of the datum as defined on Page 16 of this manual. The total amount of the aircraft about the datum defined on Page 16 in the operating weight condition and with the landing gear extended is _____ lb. inches.

APPENDIX:

<u>ITEM</u>	<u>LEVER ARM - INS.:</u>
Fuel in Tanks (Main -Quantity 5 Galls)	+7
Fuel in Tanks (Wing - Quantity 7 1/2 Galls each)	+25
Maximum total usable capacity of fuel tanks is 20 imp: Gallons.	
Weight of this quantity of fuel a 7.2 lbs. per Imp: Gallon. 142 lbs.	
Oil in Tanks	-14
Maximum total usable capacity of oil tank is 1 Imp: Gallon	
Weight of this quantity of oil at 9 lbs per Imp: Gallon 9 lbs.	
Passengers in seat: Row 1. **	+37
Baggage Hold: No. 1. at 75 lbs.	+37

**Mid position of seat adjustment

This Schedule was prepared on _____ 19____
and supersedes all previous issues.

For and on behalf of

Signed _____

**SUPPLEMENT TO
A-2 AND A-2A OWNERS' MANUALS**

PAGE 1 OF 2
NOV. 1969

INTRODUCTION: THE FOLLOWING INFORMATION MUST BE INCLUDED IN THE OWNER MANUALS OF ALL ALON AND MOONEY MODELS A-2 AND A-2A AIRCRAFT WHICH HAVE COMPLIED WITH SERVICE BULLETIN NO: A-19 (M10-1). THIS SUPPLEMENT IS TO BE PERMANENTLY ATTACHED TO ALL APPLICABLE OWNER MANUALS ON PAGE SUCCEEDING LAST ENTRY IN MANUAL (PAGE 6-3 ON A-2 AND PAGE 7-2 ON A-2A).

SECTION III

WEIGHTS - (Ref. pages 3-2 & 7-1)

	<u>A-2</u>	<u>A2-A</u>
Gross Weight	1450	1450 LBS.
Empty Weight	960 (appx)	972 LBS. (appx)
Useful Load	490	478 LBS.
Baggage Capacity	75	90 LBS.

FUEL AND OIL - (Ref. Page 3-2)

FUEL AND OIL (A-2 & A-2A)

Fuel Capacity	(22.1 Gals. Usable) 24.0 GALS. Total
Oil Capacity	5.0 QTS.
Oil Grade	S.A.E. 20 Below 40° F. S.A.E. 40 Above 40° F.
Fuel Aviation Grade	80/87 Minimum Grade

CRUISE PERFORMANCE (A-2 & A-2A)

ALTITUDE	RPM	%BHP	GAL./HR.	ENDURANCE (HOURS) 22.1 Gals.	RANGE** (MILES) 22.1 Gals.	AIRSPEED (TRUE)
2000	2100	53	4.23	5.22	514	110
	2350	73	5.66	3.90	460	118
	2475	83	6.60	3.35	402	120
4000	2100	49	3.96	5.58	575	103
	2350	68	5.23	4.23	512	121
	2475	78	6.16	3.59	456	127
6000	2100	46	3.69	5.99	605	101
	2350	63	4.90	4.51	528	117
	2475	77	6.15	3.59	438	122

*Decrease the distance shown by 10% for each 4 knots of headwind. Refer to Koch Chart on back of Sectional Map for temperature and field elevation correction.

**Figures based on Calibrated Airspeed.

NOTE

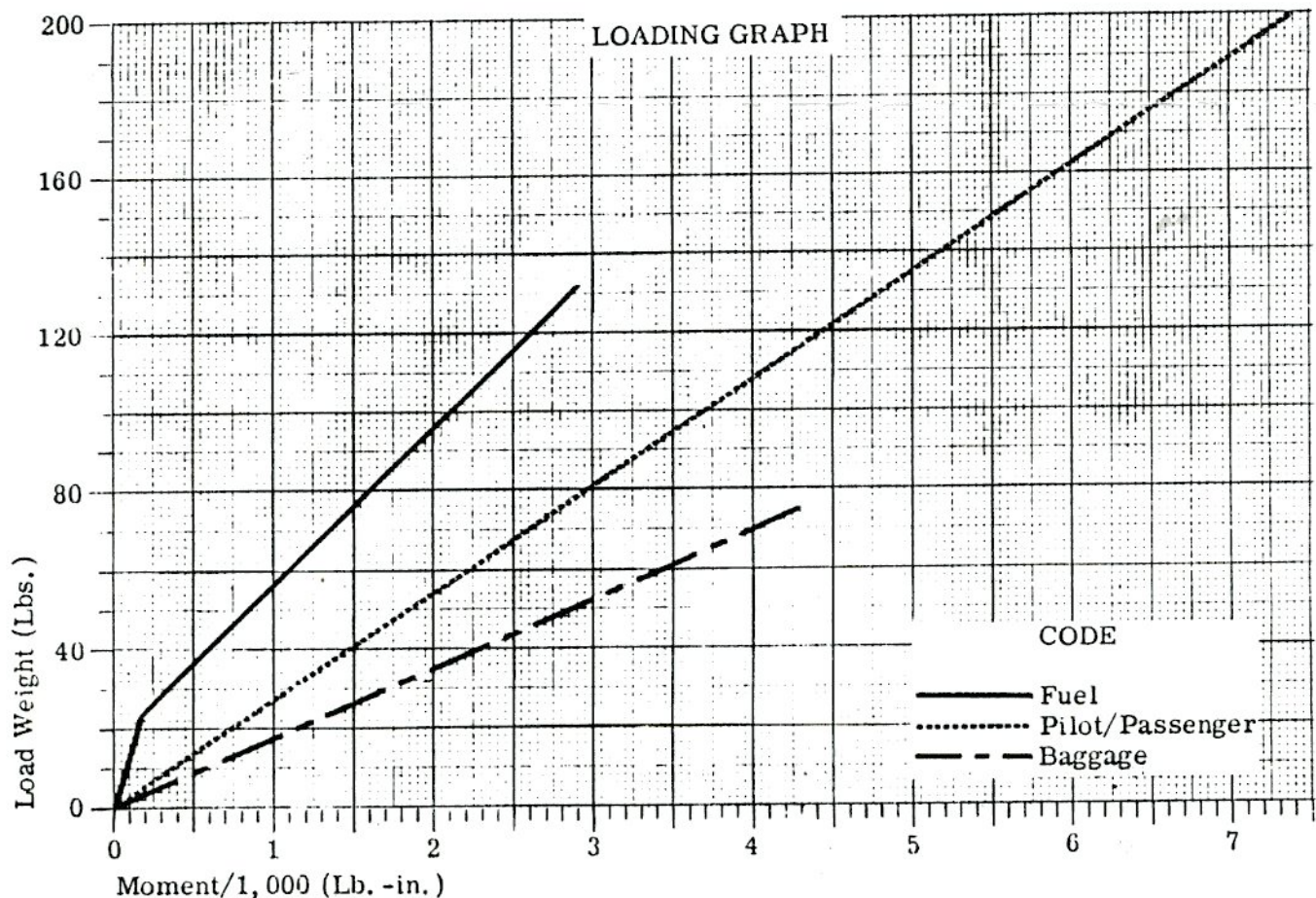
Performance figures are for a "STANDARD CONFIGURATION" aircraft flown at gross weight under standard conditions at sea level. Any change from standard equipment will result in change in performance.

SECTION IV

WEIGHT & BALANCE SAMPLE LOADING PROBLEM - (Ref. page 4-1)

Sample Loading Problem		Load Weight (Lb)	Moment 1000(Lb-in)
1. Empty Weight (Includes Oil & 15.5 LBS. UNUSABLE FUEL)		972 ^x	26.2 ^x
2. Fuel (22.1 Gallons at 6 lbs/Gal)		132	2.9
3. Pilot/Passenger (SEATS FORWARD)		320	11.8
4. Baggage		26	1.5
5. Total Weight		1450	42.4
6. Locate 1450 at 42.4 on the Center of Gravity Limitations chart; since this point falls within the enclosed area, loading is acceptable.			
^x Obtain from Aircraft Weight and Balance sheet.			

LOADING GRAPH - (Ref. page 4-2)



Neither this document (nor any amendment hereto) nor anything contained herein shall be construed an assumption by this corporation of any of the obligations or liabilities of its predecessors, Mooney Aircraft, Inc. or Mooney Corporation, both Texas corporations, or as otherwise imposing on Mooney Aircraft Corporation (a Pennsylvania corporation), any of the obligations or liabilities of its predecessors.

NOTE: CORRECT WEIGHT & BALANCE RECORD TO CONFORM WITH ALL DATA IN THIS SUPPLEMENT.

