Caproni Vizzola
costruzioni aeronautiche S.p.A.

GRUPPO
AGUSTA

AIRPLANE FLIGHT MANUAL

CAPRONI VIZZOLA
C22J

Serial No _____

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Type Certificate No A-278

THIS HANDBOOK INCLUDES THE MATERIAL REQUIRED TO BE FURNISHED TO THE PILOT BY REGISTRO AERONAUTICO ITALIANO REGULATIONS AND ADDITIONAL INFORMATION PROVIDED BY THE MANUFACTURER

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LIST OF EFFECTIVE PAGES

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(*) Fully approved by REGISTRO AERONAUTICO ITALIANO

SECTION 1

GENERAL

SECTION 1

GENERAL

1.1. NOTES TO USERS

General

It is the pilot's responsability to be familiar, at all times, with the content matter of this Flight Manual. Informations are contained in six sections, viz:

Section 1	General
Section 2	Limitations
Section 3	Emergency Procedures
Section 4	Normal operating procedures
Section 5	Performance
Section 6	Weight and balance

Information in this flight manual relates to an aeroplane typically equipped to acrobatic certification standards.
Each section contains a detailed list of contents.
Whenever the Certificate of Airworthiness is required to be carried, this flight manual must also be aboard the aeroplane as it is an essential part of the above-mentioned certificate.

Applicability

Application of this Manual is limited to the specific Caproni Vizzola C22J model airplane designated by serial number and registration on the face of the title page.
This Manual cannot be used for operational purposes unless kept in a current status.

Revisions

The information contained in the Airplane Flight Manual will be kept current by revisions distributed to the airplane owners.
Revision material will consist of information necessary to update the text of the present handbook.
Revisions will be distributed whenever necessary as complete page replacements or additions and shall be inserted into the Manual in accordance with the instructions given below.

1. Revision pages will replace only pages with the same page number.
2. Insert all additional pages in proper numerical order within each section.
3. Page numbers followed by a small letter shall be inserted in direct sequence with the same common numbered page.

Page identification

The page numbers in each section include the section number and a dash (i.e. "3" for all pages in the "Emergency Procedures" section) followed by the serial number of the page beginning with "1" for each section, such as 3-1, 3-3, etc.
Each page bears a page number and date of issue of revision at the bottom.

Identifying revised material

A revision to a page is defined as any change to the printed matter that was previously printed on that page.
Revisions, additions and deletions is identified by a vertical black line along the outside of the page opposite only that portion of the printed matter that was changed.

Log of revisions

So as to provide, at all times, a check on the completeness of this Manual, a Log of Revisions follows the title page.

List of Effective pages and Revision Highlights

So as to provide, at all times, a check on the completeness of this manual, a List of Effective Pages and Revisions Highlights Pages are included in the Preliminaries.
With each Revision and ameneded List of Effective pages and new pages bearing Revision Highlights will be issued, thus ensuring a constant summary of Sections 1 to 6.

1.3. ASSOCIATED PUBLICATIONS

Useful publications relating to equipment are listed below for the convenience of the user:

1. C22J General Vehicle Manual(1T-C22J2-00GV-00)
2. C22J General System Manual(1T-C22J2-00GS-00)
3. C22J Scheduled Inspection and Maintenance Requirements (1T-C22J-6R)

4. C22J Technical Manual Organisation Maintenance Job Guide (1T-C22J-2-00JG-00)

5. C22J Fault Isolation Manual (1T-C22J-2-00FI-00)

6. C22J Wiring Data Manual (1T-C22J-2-00WD-00)

7. Microturbo TRS18 - Installation and Operation Manual (DT 86-25)

8. Microturbo TRS18 - Maintenance Manual (DT 86-26)

9. Operating Instructions for Navigation and Communications Installations, as published by the relevant equipment manufacturers.

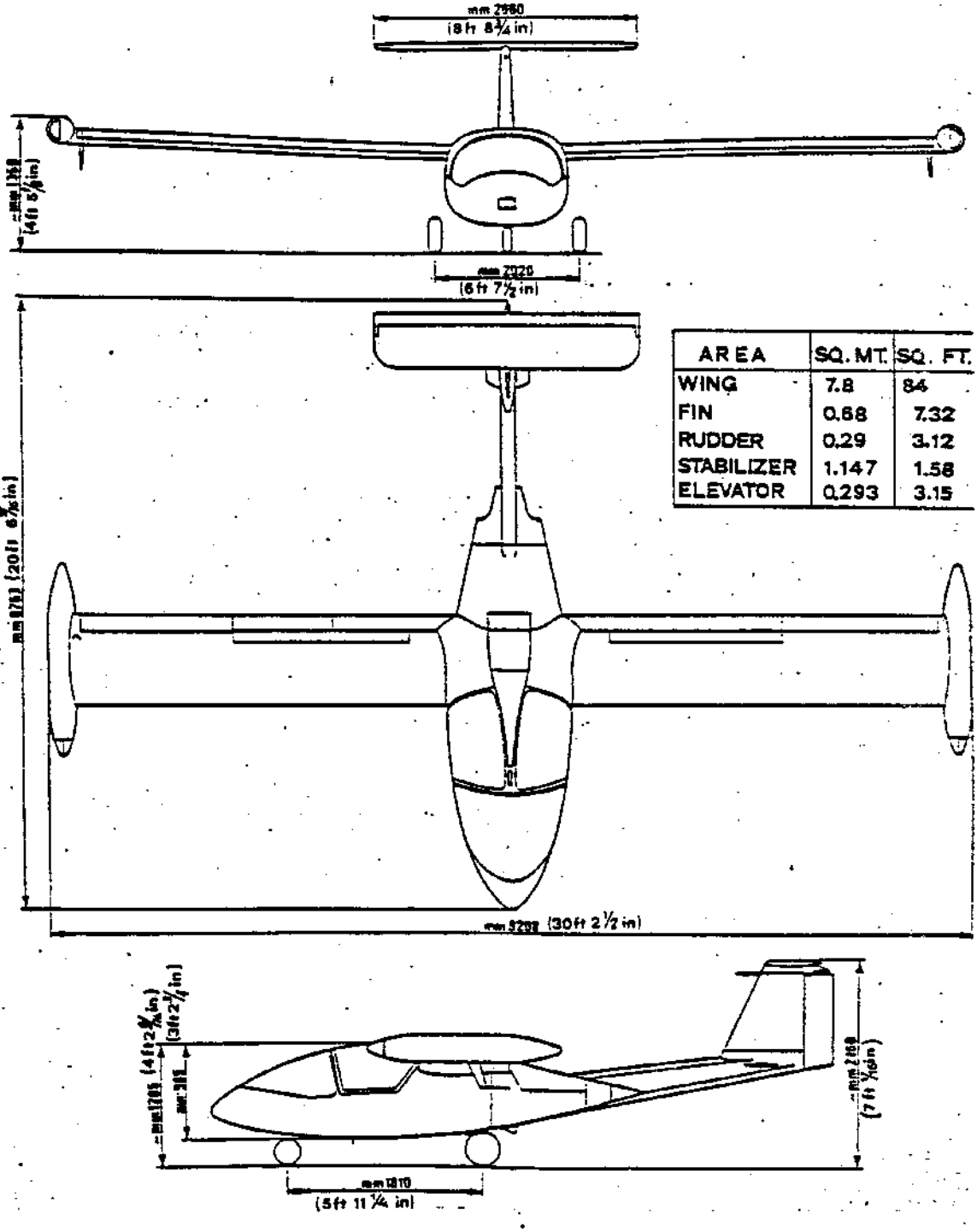
1.5. DIMENSIONS AND AREAS

A three-view illustration showing the pertinent details of the aeroplane appears in Fig.1 and 2.

1.7. ENGINES

(a) Number of Engines	2
(b) Engine Manufacturers	Microturbo
(c) Engine Model Number	TRS 18-1-202
(d) Take-off thrust	145 daN
(e) Engine RPM at Take-off	48750
(f) Maximum continous thrust	130 daN
(g) Engine RPM	47000
(m) Engine type	
Compressor stages and type	1- centrifugal
Turbine stages and type	1- axial
Combustion chamber type	annular reverse flow

CAPRONI VIZZOLA
C 22 J



AREA	SQ. MT.	SQ. FT.
WING	7.8	84
FIN	0.68	7.32
RUDDER	0.29	3.12
STABILIZER	1.147	1.58
ELEVATOR	0.293	3.15

Figure 1-1

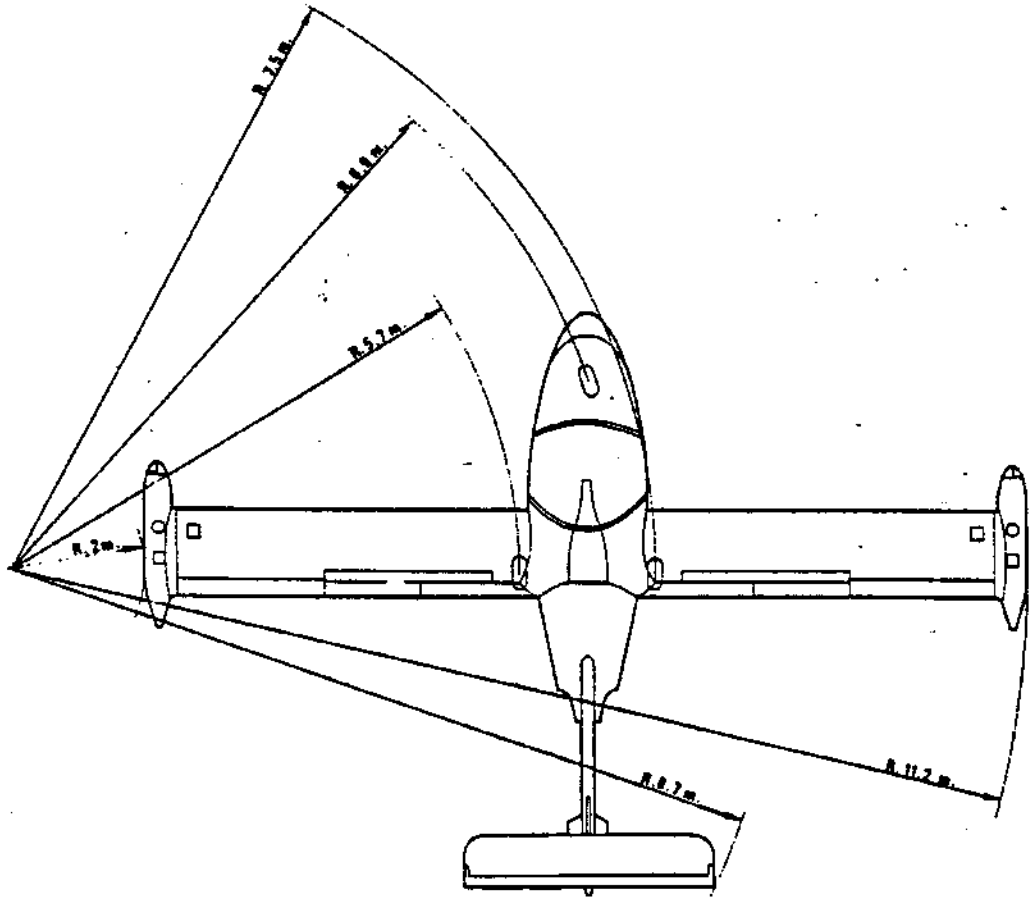


Figure 1-2
Turning radius

1.9. FUEL

(a) Fuel capacity(total)
(U.S Gal/lit) 113.6/430

(b) Usable fuel (total)
(U.S Gal/lit) 110.6/418.5

(c) Fuel specification

FUEL TYPE	NATO CODE	SPECIFICATIONS		COMMERCIAL DENOMINATION
		FRANCE	U.K.	
kerosene - 50° C (+ S 748)	F 34	AIR 3405/ C/F-34	D. Eng. RD 2453	Fuel TRO kerosene JP 8 AVTUR/FS II (with antifreeze additive) MIL T 83133
kerosene - 50° C (without inhibitor)	F 35	AIR 3405/ C/F-35	D. Eng. RD 2494	Fuel TRO AVTUR ASTM-D-1655 JET A1 or JET A (without antifreeze additive)

For operations into forecast temperatures below +5 deg. C the use of fuel anti-icing additive Phillips PFS-S5MB is required. The additive concentration by volume shall be a minimum of 0.08 and a maximum of 0.15 per cent.

1.11. OIL

(a) Oil capacity (each engine) (U.S Gal/lit) 0.211/0.8

(b) Usable oil(U.S Gal/lit) .132/0.5

(c) Oil specification MIL-L-23699 or MIL-L-7808

1.13. WEIGHTS	lb	kg
(a) Maximum take-off weight	2764	1255
(b) Maximum landing weight	2582	1172
(c) Maximum zero fuel weight	2037	925
(d) Maximum weight in the baggage compartment	24	11
(e) Standard empty weight(*)	1628	739

1.15. SPECIFIC LOADING	
(a) Wing loading (lb/sq ft - kg/sq m)	33/161
(b) Thrust loading (Max thrust/T.O.W.)	.235

1.17. BAGGAGE COMPARTMENT	lb	kg
Maximum load allowed	24	11

(*) These value are approximate and vary from one aircraft to another. Refer to Fig. 6-3 for the Basic Empty weight value and useful Load value to be used for the aircraft specified.

1.19. DEFINITIONS AND ABBREVIATIONS

The following terms are used in various sections of this manual:

a) General Airspeed terminology and Symbols

CAS	Calibrated Airspeed means the indicated speed of an aircraft, corrected for position and instrument error. Calibrated airspeed is equal to true airspeed in standard atmosphere at sea level.
KCAS	Calibrated Airspeed expressed in "Knots"
GS	Ground Speed is the speed on an airplane relative to the ground.
IAS	Indicated Airspeed is the speed of an aircraft as shown in the airspeed indicator when corrected for instrument error. IAS values published in this manual assume zero instrument error.
KIAS	Indicated Airspeed expressed in "knots".
M	Mach Number is the ratio of true airspeed to the speed of sound.
TAS	True Airspeed is the airspeed of an airplane relative to undisturbed air which is the CAS corrected for altitude, temperature and compressibility.
KTAS	True Airspeed expressed in "Knots".
V_A	Maneuvering Speed is the maximum speed at which application of full available aerodynamic control will not overstress the airplane.

V_{FE}	Maximum Flap Extended Speed is the highest speed permissible with wing flaps in a prescribed extended position.
V_{LO}	Maximum Landing Gear Operating Speed is the maximum speed at which the landing gear can be safely extented or retracted.
V_{LE}	Maximum Landing Gear Extended Speed is the maximum speed at which the aircraft can be safety flown with the landing gear extended.
V_{BE}	Maximum Airbrakes Extended Speed is the maximum speed permissible with airbrakes in extended position.
V_{BO}	Maximum Airbrakes Operating Speed is the maximum speed at which the airbrakes can be safely operated.
V_{MC}	Air Minimum Control Speed is the minimum flight speed at which the airplane is directionally and laterally controllable is, determined in accordance with Certification Regulations. Airplane certification conditions include one engine becoming inoperative; not more than a 5° bank towards the operative engine, takeoff power on operative engine, landing gear up, flaps in takeoff position and most critical C.G. NOTE: For this airplane it is not an operating limitation.
V_{MC}/M_{MO}	Maximum Operating Limit Speed in the speed limit that may not be deliberately exceeded in normal flight operations. V is expressed in knots and M in a Mach Number.

V_S	Stalling Speed or the minimum steady flight speed at which the airplane is controllable.
V_{SI}	Stalling Speed or the minimum steady flight speed obtained in a specific configuration.
V_{SO}	Stalling Speed or the minimum steady flight speed at which the airplane is controllable in the landing configuration.
V_X	Best Angle-of-Climb Speed is the airspeed which delivers the greatest gain of altitude in the shortest possible horizontal distance.
V_Y	Best Rate-of-Climb Speed is the airspeed which delivers the greatest gain in altitude in the shortest possible time.

b) Meteorological Terminology

ISA	International Standard Atmosphere in which: 1- the air is a dry perfect gas; 2- the temperature at sea level is 15° Celsius (59° Fahrenheit); 3- the pressure at sea level is 29.92 inches Hg (1013.2 mb) 4- the temperature gradient from sea level to the altitude at which temperature is -56.5°C(-69.7°F) is -0.00198°C(-0.003564°F) per foot and zero above that altitude.

OAT	Outside Air Temperature is the free air static temperature obtained either from inflight temperature indications or ground meteorological sources, corrected for instrument error and compressibility effects.
INDICATED PRESSURE ALTITUDE	The number actually read from an altimeter when the barometric subscale has been set to 29.92 inches of mercury (1013.2 millibars).
PRESSURE ALTITUDE	Altitude measured from standard sea level pressure (29.92" Hg) by a pressure or barometric altimeter. It is the indicated pressure altitude corrected for position and instrument error. In this manual altimeter instrument errors are assumed to be zero.
STATION PRESSURE	Actual atmospheric pressure at field elevation.
WIND	The wind velocities recorded as variables on the charts of this manual are to be understood as the headwind or tailwind components of the reported winds.
HEIGHT	The vertical distance between the lower part of the aeroplane and the relevant datum.

c) Thrust Terminology

TAKEOFF THRUST	Maximum thrust permissible during takeoff

MAXIMUM CONTINUOUS THRUST	Maximum thrust permissible for unrestricted periods of use.

d) Engine Controls and Instruments

EGT GAUGE	Exhaust Gas Temperature gauge indicates temperature of the gases at the outlet of the gas producer turbin rotor.

e) Airplane Performance and Flight Planning Terminology

CLIMB GRADIENT	The ratio, in the same units, and expressed as a percentage of: change in height / horizontal distance travelled in the same time interval
DEMONSTRATED CROSSWIND VELOCITY	The demonstrated crosswind velocity is the crosswind component for which adequate control of the airplane during takeoff and landing was actually demonstrated during certification tests. Is not considered a limitation.

f) Weight and Balance

REFERENCE DATUM	An imaginary vertical plane from which all horizontal distances are measured for balance purposes.

ARM	The horizontal distance from the reference datum to the center of gravity (C.G.) of an item.
MOMENT	The product of the weight of an item multiplied by its arm. (Moment divided by a constant is used to simplify balance calculations by reducing the number of digits).
CENTER OF GRAVITY (C.G.)	The point at which an airplane would balance if suspended. Its distance from the reference datum is found by dividing the total moment by the total weight of the airplane.
C.G. ARM	The arm obtained by adding the airplane's individual moments and dividing the sum by the tototal weight.
C.G. LIMITS	The extreme center of gravity locations within which the airplane must be operated at a given weight.
USABLE FUEL	Fuel available for flight planning.
UNUSABLE FUEL	Fuel remaining after a runout test has been completed in accordance with certification regulations.
STANDARD EMPTY WEIGHT	Weight of a standard airplane including unusable fuel, as defined by the Equipment List.

BASIC EMPTY WEIGHT	Standard empty weight plus optional equipment actually installed.
PAYLOAD	Weight of occupants,cargo and baggage
USEFUL LOAD	Difference between takeoff weight and basic empty weight. It includes payload and usable fuel.
MAXIMUM TAKECFF WEIGHT	Maximum weight approved
MAXIMUM LANDING WEIGHT	Maximum weight approved for the landing touchdown.
MAXIMUM ZERO FUEL WEIGHT	Maximum weight with no usable fuel.

1.21. CONVERSION FACTORS

LENGTH

Multiply	By	To Obtain
Centimeters	0.3937	Inches
	0.03281	Feet
	.01	Meters
Kilometers	3281	Feet
	0.6214	Miles
	0.5396	Nautical Miles
	1093.6	Yards
Meters	39.37	Inches
	3.281	Feet
	1.0936	Yards
Miles (statute)	5280	Feet
	0.8684	Nautical Miles
	1760	Yards
Nautical Miles	6080.2	Feet
	1.152	Miles

WEIGHT

Multiply	By	To Obtain
Grams	15.432	Grains
	0.03527	Ounces (advp)
	0.002205	Pounds (advp)
	1000	Milligrams
	0.001	Kilograms
Kilograms	2.205	Pounds (advp)
	35.27	Ounces (advp)
	1000	Grams
Pounds (advp)	7000	Grains
	16.0	Ounces
	1.215	Pounds (troy)

WEIGHT (continued)

Multiply	By	To Obtain
Tons (long)	2240	Pounds (advp)
	1016	Kilograms
Tons (metric)	1000	Kilograms
	2205	Pounds (advp)
	1.102	Tons (short)
Tons (short)	2000	Pounds (advp)
	907.2	Kilograms
	0.9072	Tons (metric)

VOLUME

Cubic Centimeters	10^{-3}	Liters
	0.0610	Cubic Inches
Cubic Feet	28317	Cubic Centimeters
	1728	Cubic Inches
	0.03704	Cubic Yards
	7.481	Gallons
	28.32	Liters
Cubic Inches	4.329×10^{-3}	Gallons
	0.01732	Quarts
Cubic Meters	61023	Cubic Inches
	35.31	Cubic Feet
	264.17	Gallons
	1308	Cubic Yards
Gallons Imperial	277.4	Cubic Inches
	1.201	U.S Gallons
	4.546	Liters
Gallons, U.S.	231	Cubic Inches
	0.1337	Cubic Feet
	3.785	Liters
	0.8327	Imperial Gallons
	128	Liquid Ounces
Ounces, Liquid	29.57	Cubic Centimeters
	1.805	Cubic Inches

AREA

Multiply	By	To Obtain
Square Centimeters	0.1550	Square Inches
	0.001076	Square Feet
Square Feet	144	Square Inches
	0.1111	Square Yards
Square Inches	645.16	Square Millimeters
Square Kilometers	0.3861	Square Miles
Square Meters	10.76	Square Feet
	1.196	Square Yards
Square Miles	2.590	Square Kilometers
	640	Acres

VELOCITY

Multiply	By	To Obtain
Feet Per Minute	0.01136	Miles Per Hour
	0.01829	Kilometers Per Hour
	0.5080	Centimeters Per Second
	0.01667	Feet Per Second
Feet Per Second	0.6818	Miles Per Hour
	1.097	Kilometers Per Hour
	30.48	Centimeters Per Second
	0.3048	Meters Per Second
	0.5921	Knots
Knots	1.0	Nautical Miles Per Hour
	1.6889	Feet Per Second
	1.1515	Miles Per Hour
	1.8532	Kilometers Per Hour
	0.5148	Meters Per Second

VELOCITY (continued)

Multiply	By	To Obtain
Meters Per Second	3.281	Feet Per Second
	2.237	Miles Per Hour
	3.600	Kilometers Per Hour
Miles Per Hour	1.467	Feet Per Second
	0.4470	Meters Per Second
	1.609	Kilometers Per Hour
	0.8684	Knots
Radians Per Second	57.296	Degres Per Second
	0.1592	Revolution Per Second
	9.55	Revolution Per Minute

PRESSURE

Multiply	By	To Obtain
Atmospheres	29.921	Inches of Mercury
	14.696	Pounds Per Square Inch
	2116.2	Pounds Per Square Foot
Inches of Mercury	0.03342	Atmospheres
	0.4912	Pounds Per Square Inch
	70.727	Pounds Per Square Foot

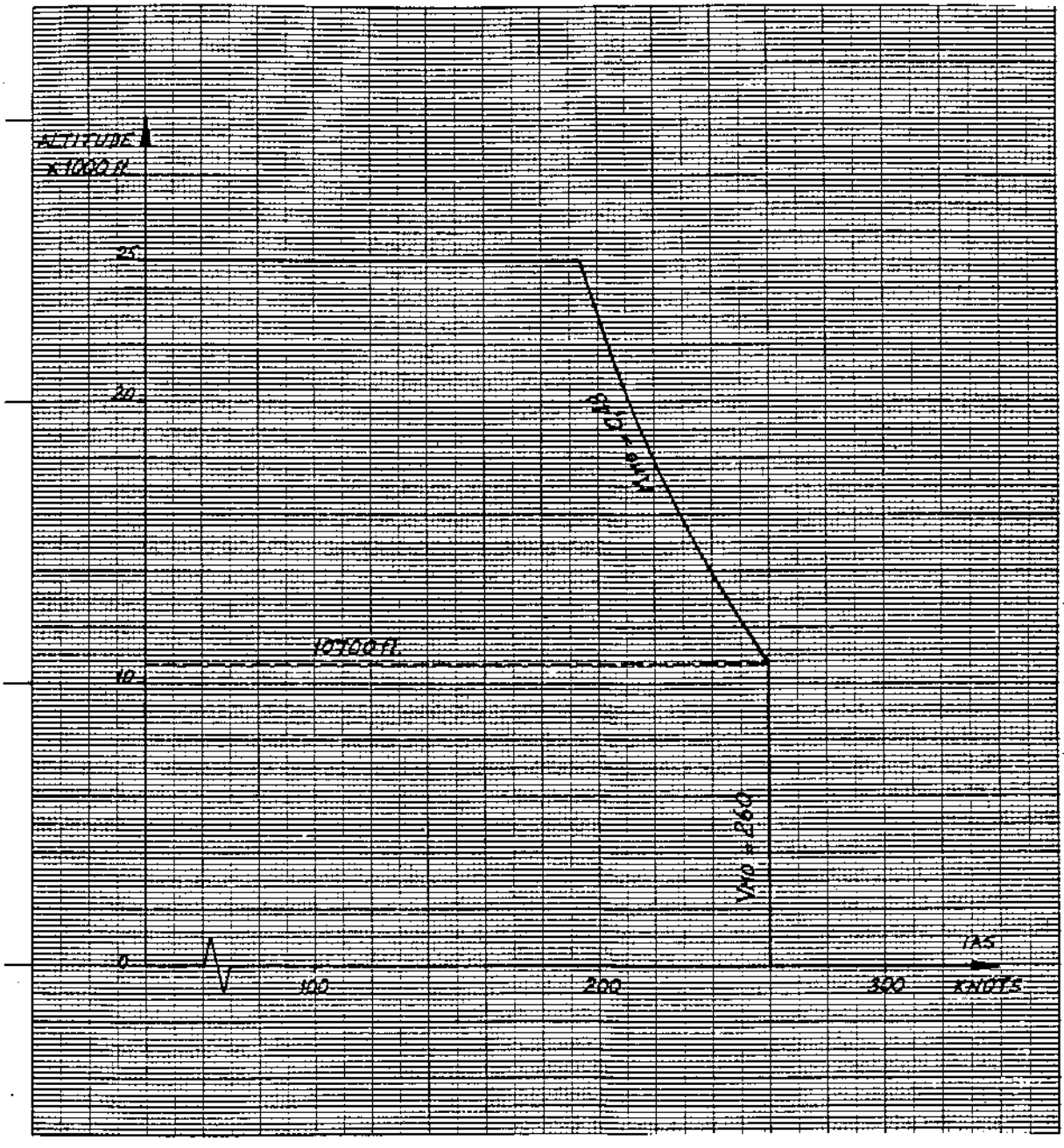


Figure 2-2
Airspeed Limitation with Altitude

TEMPERATURE

Degrees Kelvin = Degrees Centigrade Plus 273.16
Degrees Rankine = Degrees Fahrenheit Plus 459.67

Multiply	By	To Obtain
Fahrenheit	5/9 (F-32)	Centigrade
Centigrade	9/5 (C+17.8)	Fahrenheit

ANGULAR DISPLACEMENT

Multiply	By	To Obtain
Degrees	1.745×10^{-2}	Radians
Radians	57.3	Degrees

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SECTION 2

LIMITATIONS

SECTION 2

LIMITATIONS

2.1. GENERAL

Section 2 of this manual presents the operating limitations, the significance of such limitations, instruments marking, color coding and basic placards necessary for the safe operation of the airplane, its powerplant, standard systems and standard equipment.

NOTE

The limitations included in this section are approved by the Registro Aeronautico Italiano.

2.3. AIRSPEED LIMITATIONS

Airspeed limitations and their operational significance are shown in Figure 2.1.
Variation of airspeed limit with height is shown in Figure 2.2

SPEED	CAS	IAS	REMARKS
Maneuvering Speed V_A (Knots)	228	231	Do not make full or abrupt control movements above this speed.
Maximum Flap Extended Speed V_{FE} (Knots)	150	152	Do not exceed this speed with a given flap setting.
Maximum Landing Gear Operating Speed V_{LO} (Knots)	140	142	Do not extend or retract landing gear above this speed.
Maximum Landing Gear Extended Speed V_{LE} (Knots)	140	142	Do not exceed this speed with landing gear extended.
Maximum Airbrakes Extended/operating Speed V_{BE}(knots)/ V_{BO}	150	152	Do not exceed the speed with airbrakes extended or for airbrakes operation
Maximum Operating Speed Limit V_{MO} (Knots) M_{MO} (Mach #)	257 0.473	260 0.48	Do not exceed this airspeed or Mach Number in any operation. (V_{MO} is limiting speed up to 10700 ft)

Note: V_{MC} is not a limitation for this airplane.

Figure 2-1
Airspeed Limitations

2.5. AIRSPEED INDICATOR MARKINGS

Airspeed indicator markings and their color significance are shown in Fig. 2-3.

MARKING	IAS VALUE OR RANGE	SIGNIFICANCE
White Arc	70 - 152 KTS	Full Flap Operating Range. Lower limit is maximum weight stalling speed in landing configuration. Upper limit is maximum speed permissible with flaps extended.
Blue Sector	114 - 124 KTS	One Engine Inoperative Best Rate of Climb at 1255 kg (2767 lb) between S.L. and 14000 ft
Red Lines	260/0.48	Maximum speed for all operations. (V_{MO}/M_{MO})

Figure 2- 3
Airspeed Indicator Markings

2.7. POWER PLANT LIMITATIONS

a) Number of Engines 2

b) Engine Manufacturer MICROTURBO

c) Engine Model Number TRS 18-1-202

d) Engine Operating Limits
see Fig. 2.4 and 2.5

e) Maximum starting altitude 20.000 ft see fig. 2.5

OPERATING CONDITION	OPERATING LIMITS				
	N%	EGT(°C) max	OIL PRESS. (bar) max	OIL TEMP. (°C) max	FUEL PRESSURE (bar)
TAKEOFF (1)	104	820÷860	0.7÷3	140°	1,2-3
MAX CONTINUOUS	100	820	0.7÷3	140°	1,2-3

(1) Max time for take-off thrust: 2 minutes.

Figure 2-4

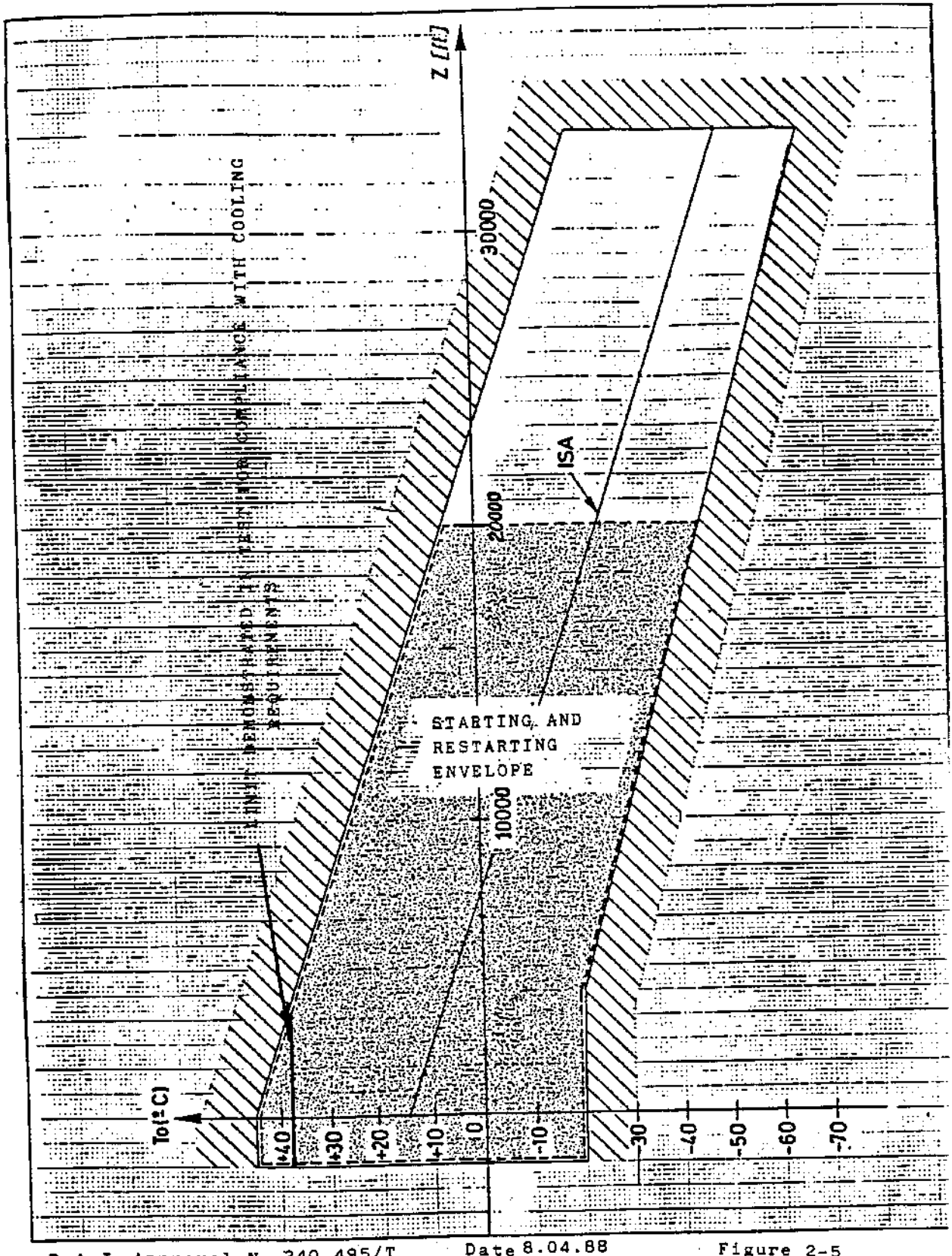

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Figure 2-5
Operating Envelope

f) Fuel Specification:

FUEL TYPE	NATO CODE	SPECIFICATIONS		COMMERCIAL DENOMINATION
		FRANCE	U.K.	
kerosene - 50° C (+ S 748)	F 34	AIR 3405/ C/F-34	D. Eng. RD 2453	Fuel TRO kerosene JP 8 AVTUR/FS II (with antifreeze additive) MIL T 83133
kerosene - 50° C (without inhibitor)	F 35	AIR 3405/ C/F-35	D. Eng. RD 2494	Fuel TRO AVTUR ASTM-D-1655 JET A1 or JET A (without antifreeze additive)

For operations into forecast temperatures below +5 deg C the use of fuel anti-icing additive Phillips PFS-55MB is required.
The additive concentration by volume shall be a minimum of 0.08% and a maximum of 0.15 per cent.

g) Oil Specification:
Oil conforming to MIL-L-23699B or MIL-L-7808

h) Ambient Temperature limitations:
Maximum ambient atmospheric Temperature at which compliance with cooling requirements is shown: 37.8°C (100°F).

2.9. POWERPLANT INSTRUMENT MARKINGS

Meaning of instruments markings and the value of limits are in Figure 2.6.

INSTRUMENT	Red Line	Yellow Arc	Green Arc	Yellow Arc	Red Line
	MINIMUM LIMIT	CAUTION RANGE	NORMAL OPERATING	CAUTION OR TAKEOFF	MAXIMUM LIMIT
Engine Rotational Speed (N%) Indicator			53-100	100-104	104
EGT Temperature (°C)			up to 820	820-860	860
Oil Pressure	0.7		0.7-3		
Oil Temperature			0-140		140
Fuel pressure	0.55	0.55-1.2	1.2-3		

Figure 2-5

Powerplant Limits

2.11. WEIGHT LIMITS

It is the responsability of the airplane owner and pilot to assure that the airplane is properly loaded. Maximum allowable weights are listed below. Refer to Section 6 "Weight and Balance" for loading instructions.

	lb	kg
a) Maximum Takeoff Weight	2767	1255
b) Maximum Landing Weight	2583	1172
c) Maximum zerofuel Weight	2037	925

2.13. CENTER OF GRAVITY LIMITS
(Refer to Fig. 2-7)

a) Forward limit
92.95 in (2361 mm) aft of Datum at all weights

b) Rearward limits
94.58 in (2402 mm) aft of Datum at maximum takeoff weight

97.02 in (2464 mm) aft of Datum at 2588 pounds (1175 kg) or less

(The chord is 35.433 in (900 mm) long)

NOTES

Straight line variation between points indicated. The Datum line is located 82.677 inches (2100 mm) in front of wing leading edge.

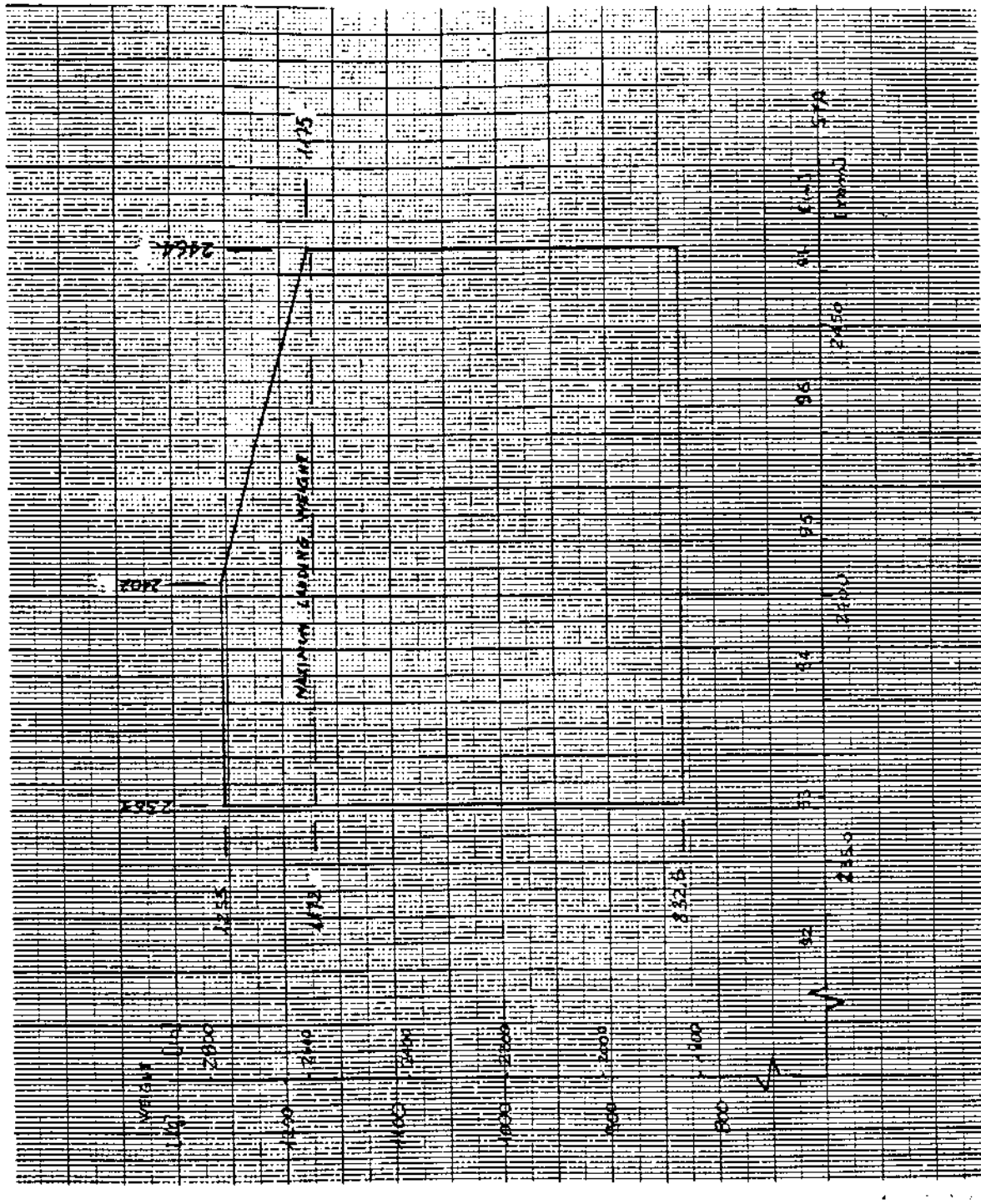


Figure 2-7
Center of Gravity Limits

2.15. MANEUVERS LIMITS

This is an acrobatic category aircraft.
For the following maneuvers the corresponding entry speed are recomended:

Barrel roll	Entry speed: 180 KIAS
Aileron roll	: 180 KIAS
Wing over	: 180 KIAS
Looping	: 200 KIAS
Half roll at top of the loop	: 220 KIAS
Half cuban eight	: 200 KIAS
Chandelle	: 200 KIAS

Spin (cruise configuration only) Stall + 5 KIAS

Spin with flaps down and inverted spins are prohibited.
Negative g flight is limited to 30 seconds.
When above the maneuvering speed (refer to Figure 2-1) the controls must not be fully abruptly deflected.

2.17. FLIGHT MANEUVERING LOAD FACTORS LIMITS

a) Positive Load Factor (Flaps Up)	7.0 G
b) Negative Load Factor (Flaps Up)	-3.5 G
c) Positive Load Factor (Flaps Down and/or Airbrakes Open)	3.5 G

2.19. FLIGHT CREW

Minimum Crew — One pilot

2.21 KINDS OF OPERATION

The standard airplane is approved for day and night operations under VFR conditions provided the minimum equipment required by the applicable operational rules are installed.

NOTE

Whenever oxygen is required, mask type MBU-5/P or similar must be used to be interfaced with aircraft provisions.
Oxygen masks are not part of the aircraft, they are part of the crew equipment.

The airplane has not been approved for flight in known icing conditions.

2.23. FUEL LIMITATION

a) Unusable fuel quantity (for the complete system) — 3 US Gal (11.5 lt)

b) Usable fuel quantity (for the complete system) — 110.6 US Gal (418 lt)

NOTES

. Fill the internal tanks before fuelling the tip tanks.

. Close the wing fueling points before fueling the tip tanks.

. Before fuelling connect the earth cable of the fuelling vehicle to the nose landing gear.

2.25. MAXIMUM OPERATING ALTITUDE LIMIT

Flight up to 25.000 ft is approved if the aircraft is equipped with oxygen in accordance with the applicable operational rules.

2.27. SEATING LIMITATION

The maximum number of occupant is two (including the pilot).
Pilot must seat on the side of flight instruments.

2.29. PLACARDS

In full view of the pilot:

RECOMENDED ENTRY SPEEDS FOR ACROBATIC MANEUVERS

BARREL ROLL	....180 KIAS
AILERON ROLL	....180 KIAS
WING OVER	....180 KIAS
LOOPING	....200 KIAS
HALF ROLL AT TOP OF THE LOOP	....220 KIAS
HALF CUBAN HEIGHT	...200 KIAS
CHANDELLE	....200 KIAS
SPIN	STALL+ 5 KIAS

INVERTED FLIGHT : 30 SEC MAX

INTENTIONAL SPINS WITH FLAPS AND/OR LND GR-AIRBR EXTENDED ARE PROHIBITED.
SPIN RECOVERY : APPLY RUDDER OPPOSITE TO SPIN ROTATION WITH NEUTRAL AILERONS AND PULLED STICK. AS SOON AS THE ROTATION HAS STOPPED CENTRALIZE RUDDER AND MOVE STICK FORWARD TO NEUTRAL POSITION.

THIS AIRCRAFT IS APPROVED FOR DAY-NIGHT VFR CONDITIONS.
FLIGHT IN KNOWN FORECAST ICING CONDITIONS PROHIBITED.

THE MARKINGS AND PLACARDS INSTALLED IN THIS AIRPLANE CONTAIN OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THE ACROBATIC CATEGORY.
OTHER OPERATING LIMITATIONS WHICH MUST BE COMPLIED WITH WHEN OPERATING THIS AIRPLANE IN THIS CATEGORY ARE CONTAINED AIRPLANE FLIGHT MANUAL.

PULL TO REMOVE

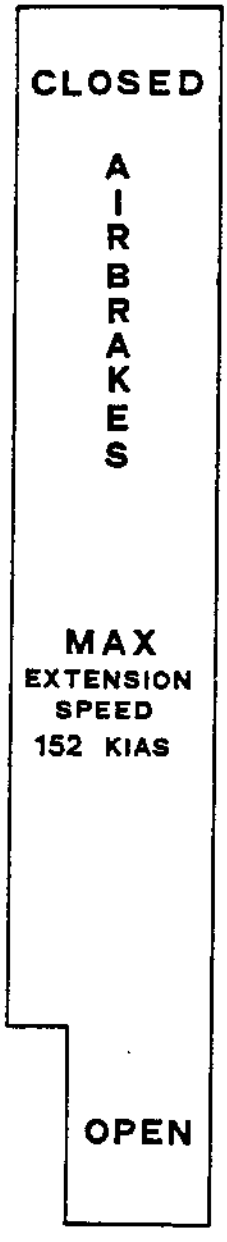
EMERGENCY GEAR EXTENSION

1 SET CONTROL SWITCH TO MIDDLE POSITION

2 DISCONNECT ACTUATOR BY EM. GEAR RELEASE

3 INSERT INTO THE LEVER THE ROD STORED UNDER COVER

4 MOVE FORWARD UP TO LOCK


CLOSED
AIRBRAKES
MAX
EXTENSION
SPEED
152 KIAS
OPEN

TURN OFF STROBE LIGHT WHEN TAXIING NEAR OTHER AIRCRAFT OR WHEN FLYING IN FOG OR CLOUDS. POSITION LIGHTS MUST BE USED FOR ALL NIGHT OPERATIONS.

NO SMOKING

MAXIMUM V_A 231 KIAS
MAXIMUM V_{LO} 142 KIAS

On baggage compartment

MAXIMUM BAGGAGE 11 KG 24 LBS

On canopy ceiling:

- Calibration placard for magnetic compass.

SECTION 3

EMERGENCY PROCEDURES

SECTION 3

EMERGENCY PROCEDURES

3.1. INTRODUCTION

This section is divided into Ground Operation Emergencies, Take-off Emergencies, In-Flight Emergencies, and Landing Emergencies.
Three basic rules, which apply to all emergencies, are established.

1. Maintain aircraft control.
2. Analyze the situation and take proper action.
3. Land as the situation dictates or abandon the aircraft.

NOTE

The emergency conditions combined with the pilot's analysis of the situation, type emergency, and proficiency are of prime importance in determining the urgency to land. The following information provides general guidance.

Land As Soon As Possible:

An emergency will be declared.
A landing should be accomplished at the nearest suitable airfield considering the severity of the emergency, weather conditions, field facility, lighting, a/c gross weight.

Land as soon as practical:

Emergency conditions are less urgent and, although the mission is to be terminated, the degree of the emergency is such that an immediate landing at the nearest suitable airfield may not be necessary.

3.3. GROUND OPERATION EMERGENCIES

3.3.1. Engine fire or overtemperature during start

An engine fire during start may be caused by an excess of fuel inside the combustion chamber.
The fire is indicated by flames from exhaust stacks and rapid increase of EGT and/or FIRE Warning light on.

1. Engine MAST-OFF
2. Motor engine or abandon A/C

3.3.2. Ground abandonment

1. Canopy latch - Open
2. Shoulder harness - Release
3. Headphone/microphone and oxygen mask (if applicable) - Disconnect

3.5. TAKE-OFF EMERGENCIES

General
When a take-off emergency occurs the pilot is faced with the decision between aborting or continuing the take-off.
The decision will be influenced by the nature of the take-off where the emergency is recognized, the ability to accomplish a safe abort or to continue take-off to a safe altitude for subsequent emergency landing or bail-out.

The decision of aborting a take-off will be influenced by two factors:

* Aircraft factor - nature of the failure, gross weight, configuration, and speed.
* Runway factor - remaining runway length, existence of obstacles, condition of surface.

NOTE

It is not possible to retract the landing gear when the aircraft is on the ground.

3.5.1. Engine fire before rotation

1. Throttles - IDLE
2. Engine MAST (both) - OFF
3. Brakes - Apply
4. BATT Switch - OFF

3.5.2. Engine failure before rotation (speed below 78 kts)

1. Throttles - IDLE
2. Brakes - Apply
3. Mantain direction with nosewheel steering

IF UNSUFFICIENT RUNWAY REMAINS FOR A SAFE STOP

4. Engine MAST (both) - OFF
5. BATT switch - OFF

3.5.3. Engine control box failure after lift-Off

This situation is indicated by:

- engine RPM: Idle
- P NORM warning light: lighted

1. Airspeed - Check
2. Direction - Maintain
3. Identify inoperative engine
4. Corresponding emergency throttle - Turn clockwise carefully

CAUTION

Emergency control system is provided with neither overspeed nor external temperature automatic limiting circuits. It is pilot's responsibility not to exceed the engine limitations (in these operating conditions).

5. Landing gear - UP
6. Continue climb straight ahead and reach 95 kts.

WHEN SAFE ALTITUDE IS REACHED

7. Primary engine throttle - 100%
8. Emergency throttle (inoperative primary control) - 100%
9. Accelerate to 115 Kias
10. Flaps - UP

Land as soon as practical

3.5.4. <u>One engine flame-out after lift-Off</u>
(Speed above 78 kts)

1. Airspeed - Check
2. Direction - Mantain
   - 1-2 degree bank toward the operative engine
   - rudder as required for heading control
3. Throttle (operating engine) - FULL
4. Landing Gear - UP
5. Continue climb straight ahead and reach 95 kts

WHEN SAFE ALTITUDE IS REACHED

6. Inoperative engine master - OFF
7. Operative engine throttle - 100%
8. Flaps - UP
9. Accelerate to 115 Kias

Land as soon as practical

3.5.5. Tire blowout at takeoff

IF IT IS POSSIBLE TO STOP ON THE GROUND:

1. Throttles - IDLE
2. Direction - Mantain
3. Reduce load on the Blown Tire by lateral deflection of the control stick to the side opposite the blown tire

IF IT IS ENVISAGED TO ROLL OFF THE RUNWAY:

1. Engine MAST - OFF
2. BATT. Switch - OFF

IF IMPOSSIBLE TO STOP ON THE RUNWAY

1. Continue takeoff
2. Landing gear - Leave DOWN
3. Airspeed - Below 140 Kts
4. Consume as much fuel as possible
5. Land on the side opposite the blown tire
6. After touchdown proceed as specified for tire blowout on the ground.

3.7. IN FLIGHT EMERGENCIES

3.7.1. Engine failure

General
The engine failure is defined as a loss of power.
Due to the nature of the control of TRS 18-1-202 engine each electrical failure of the control drives the engine to idle.
Full authority on the engine may be restored by the emergency control system.
A complete engine failure, which is rarely encountered, may be caused by engine internal damage or loss of fuel supply.

The engine instruments often offer indication of impending engine failure.
Reduction of thrust and minimizing load factors will generally prolong the engine operating time prior to complete engine failure. Engine stoppage is generally due to improper or defective fuel supply system operation; this condition should be indicated by the FUEL PRESS indicator.
The engine failure does not cause sudden directional variation of this airplane.
The pilot must decide on the action to be undertaken:
to restart the engine or to continue the flight to the nearest practical field.

AFTER DETECTION OF A DEAD ENGINE

1. Rudder - Apply towards operating engine to keep direction
2. Operating engine throttle - Adjust as required
3. To climb - adjust airspeed toward the best single engine rate of climb speed (blue sector).

3.7.1.1. Engine restart

1. Altitude - Below 20.000 Ft
2. NOR BUS breaker - Pull
3. Other unnecessary electrical loads - OFF

INOPERATIVE ENGINE

3. Engine MAST - OFF
4. Throttle - IDLE
5. Fuel BOOST pump - OFF
6. Fuel shut-off light - Check "SHUT"
7. Engine MAST - ON
8. RPM - Monitor
9. EGT - Monitor

When idling RPM is obtained

10. Generator lights - Check:
    Amber GEN - "OFF"
    Green GEN - "ON"
11. Fuel pump lights - Check "OFF"
12. Fuel BOOST pump - ON

If unable to restart the engine:

13. Engine MAST - OFF

Land as soon as practical.

3.7.1.2. Compressor Stall

A compressor stall is advised by a noisy stroke and fluctuations of engine parameters.

1. Throttle - Retard to IDLE

If stall has been cleared

2. Throttle - Slowly advance
3. Monitoring engine parameter

If stall has not been cleared

2. Engine MAST - OFF
3. BOOST pump - OFF
4. Proceed for engine restart

3.7.1.3. Engine fire

Engine fire is generally indicated by a red FIRE Warning on the central warning panel.

1. Throttle - Reduce
2. Cockpit Hot Air - Close
3. Defroster - Close

WARNING

In this conditions never exceed the following limits:

speed: 160 KIAS

n_z : +3.8/-1.5 g

If light switches out:

4. RPM - To maintain flight condition
5. Land as soon as possible

If light remains ON, on the corresponding engine:

4. Engine MAST - OFF
5. BOOST pump - OFF
6. Fuel shut-off light - Check "SHUT"

If shut off light OPEN is "ON"

7. Shut-off switch - Depress

Land as soon as possible.

3.7.1.4. Oil System Failure

An oil system failure is generally indicated by oil temperature increase and/or oil pressure decrease with subsequent red OIL P warning light "ON" (rated at .9 bar).

a) Low pressure

1. Throttle - Advance to obtain 0.7 bar
2. Land as soon as practical

If minimum oil pressure cannot be obtained:

1. Throttle - IDLE
2. Engine MAST - OFF
3. BOOST pump - OFF
4. Land as soon as practical.

b) High temperature

1. Throttle - Reduce to obtain normal value
2. Resume normal throttle setting, monitor temp.

If normal value cannot be obtained

2. Throttle - mantain low RPM
3. Land as soon as practical.

3.7.2. Electrical fire

Circuit breakers insolate all electrical circuits in the aircraft and automatically interrupt power when a short circuit occurs.
However if a circuit breaker fails to operate, the wire will overheat causing the insulator to fire; this will be evident by smoke and/or fumes in the cockpit.
For smoke of fumes elimination refer to the following paragraph.

3.7.2.1. Smoke or fumes in the cockpit

1. Ventilation inlets - OPEN
2. Cabin heater and defrost - CLOSED
3. NOR BUS breaker - Pull
4. Other unnecessary electrical breakers - Pull

If smoke or fumes persist:

5. Oxygen mask - Wear
6. Diluter - 100%

If no reduction of smoke is observed

7. Land as soon as possible.

3.7.3. Electrical system failure

3.7.3.1. Single generator failure

The failure of one generator is indicated by:
- Amber GEN warning light: "ON"
- Grees GEN light: "OFF" (on control panel)
- Ammeter: 0

1. GEN switch - OFF
2. NOR BUS breaker - OUT
3. GEN switch - ON
4. GEN arm - Press

If Green light keeps "OFF" or GEN switch trips out again.

5. GEN switch - OFF
6. Land as soon as practical.

The electronic control of the involved engine is still fed by the other generator and by the battery.

If Amber and Green GEN lights are both "ON", the generator is feeding its own engine but is disconnected from the Main Busbar.
In this case it is advisable to keep the NOR BUS breaker OUT to avoid overcharge for the connected generator.

3.7.3.2. Dual generator failure

1. GEN switches - OFF
2. NOR BUS breaker - OUT
3. Descend below 10.000 ft and fuel BOOST pumps - OFF
4. Unnecessary electrical equipment - OFF

In night flight

5. Instrument light - OFF
6. Internal flood light - ON
7. Proceed as for single generator failure to reset at least one generator.

If unable to reset one generator

Land as soon as possible

3.7.4. Fuel system failure

3.7.4.1. High fuel pressure warning light lighted

1. Throttle - REDUCE

If light is still on

2. Descend as low as practical

If light is still on

3. Land as soon as practical.

3.7.4.2. Low fuel pressure warning light lighted

1. Descend - below 10.000 ft as soon as practical
2. Land as soon as practical.

3.7.4.3. Low fuel pressure (lower than 1.2 bar)

1. BOOST pump switch - Check ON
2. Throttle - Reduce
3. Descent below 10.000 ft as soon as practical
4. If pressure still low - land as soon as practical.

3.7.5. Lack of oxygen supply

1. Diluter - set to emergency
2. Bottle pressure - CHECK
3. Blinker - CHECK
4. Mask connection - CHECK

If lack persists

5. Descent - below 10.000 ft

3.7.6. Static source malfunction

1. Alternate source valve knob - PULL
2. Altitude and airspeed correction - Apply (See correction card).

3.7.7. Trim runaway

In case of trim runaway speeds can be mantained by applying a proper control force.

1. Trim breaker - PULL OUT

NOTE

Do not reinsert the breaker.

2. Land as soon as possible.

3.7.8. Trim spring failure

The trim spring failure causes the tendency of the airplane to pitch up.
The airplane is easily controllable by applying a pitch-down control force.
The force depends on the speed, the higher the speed the higher the force, being very low below 140 KIAS.
Land as soon as practical.

3.9. LANDING EMERGENCIES

WARNING

Make sure the harness are locked and tighted before any emergency landing.

3.9.1. Forced landing

1. Airspeed - best glide
2. Landing site - Select
3. Emergency radio call - Transmit
4. Shoulder harness - Lock

4. Landing gear - DOWN if suitable
5. Flaps - as required
6. Airbrakes as required.

Prior to touchdown:

7. Engine MAST (Both) - OFF
8. BATT switch - OFF

3.9.2. Single engine approach and landing

1. Engine shut down procedure - Completed
2. Normal landing procedure - Perform

3.9.3. Single engine go around

1. Throttle - FULL
2. Airbrakes - CLOSED
3. Attitude - with positive rate of climb
4. Landing gear - UP
5. Airspeed increase
6. RPM - 100%
7. Flaps - UP
8. Airspeed - Blue sector (to climb).

3.9.4. No flaps approach and landing

1. Perform a normal approach
2. Landing gear - DOWN
3. Airspeed - 105 kts
4. Airbrakes - As required

After touchdown:

5. Throttles - IDLE
6. Airbrakes - OPEN
7. Brakes - Apply as required

3.9.5. Emergency landing gear extention

1. Airspeed - Below 120 kt
2. Flaps - As required

3. LND. Gear circuit breaker - OUT
4. LND G lever - OFF position
5. L.G. disconnect lever - Release and pull
6. Emergency gear extention cover - Remove
7. Rod connected to emergency gear extention cover - Insert in the lever
8. Emergency lever - move forward up to be hooked
9. 3 Green lights - ON

NOTE

The landing gear lowered through Emergency procedure must not be retracted in flight.

3.9.6. Belly landing or L.G.partially extended

1. Shoulder harness - Lock
2. Fuel - Consume to the minimum (1/8)
3. Flaps - DOWN
4. Airbrakes - OPEN
5. Make a normal approach

Before touchdown:

6. Engine masters - OFF
7. Batt. switch - OFF
8. Contact runway at speed as low as possible
9. After a complete stop - abandon a/c

3.9.7. Landing gear unsafe indication

One of the main gear unsafe

1. Touchdown on good gear, and lower nose immediately
2. Aileron - to keep bad gear up as long as possible
3. Brakes - as necessary
4. After a complete stop - abandon a/c

In case of unsafe nose gear

1. Land in nose-up attitude
2. Control stick - aft, to hold nose up as long as possible
3. After a complete stop abandon a/c.

3.9.8. Landing with asymmetric fuel load

Increase the approach speed of 5 KTS with a dissimmetry of 6 filaments of fuel-level instrument.
Over 6 filaments increase the speed of 1 Knot for each filament.

SECTION 4

NORMAL PROCEDURES

SECTION 4

NORMAL PROCEDURES

4.1. GENERAL

This section describes the recommended procedures for the conduction of normal operations for C22J airplanes. All the required procedures and those necessary for operation of the airplane as determinated by the operating and design features of the airplane are presented.
Pilots should familiarize themselves with the procedures given in this section in order to become proficient in the normal operations of the airplane.

4.2. PREPARATION FOR FLIGHT

4.2.1. Airspeed for safe operations

The airspeed limitations are contained in the Section 2.
The following airspeeds are those which are significant to the operations of the airplane.
The figures are for standard airplanes flown at maximum gross weight under normal conditions at sea level.

	KIAS
Best rate of climb speed (Flaps up)	157
Best rate of climb speed with one engine inoperative	124
Final approach speed	95

Maximum demonstrated crosswind velocity 18 KTS

4.2.2. Weight and balance

Refere to section 2 for the weight and balance limitations, and section 6 for correct loading and C.G. computation.

4.3. PRE-FLIGHT CHECK

4.3.1. Before exterior inspection

1. Airplane status airworthiness, paper on board - Check
2. Canopy - OPEN
3. Fire extinguisher - Nearby
4. Landing gear lever - DOWN
5. Avionic switches - OFF
6. Circuit breakers - Check IN
7. BATT - ON, check voltage
8. Elevator trim - "NOSE UP"
9. Flaps - Check UP
10. Airbrakes lever - Check CLOSED
11. Fuel quantity - Check

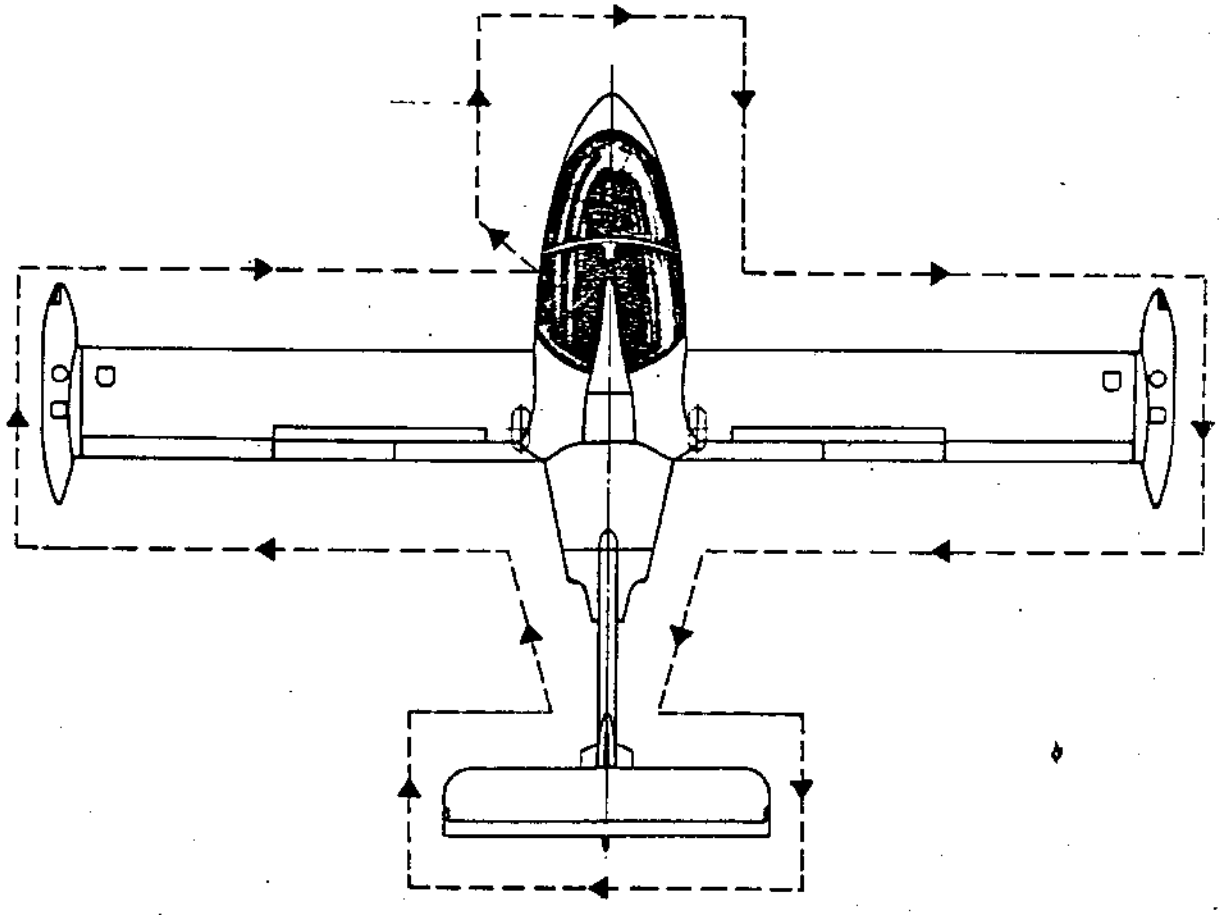
NOTE

If dissimmetry is above 3 filaments FILL the tank UP to equalize the levels.

12. Landing gear - 3 green lights "ON"
13. BATT - OFF
14. Oxygen - OPEN, check pressure

4.3.2. Exterior inspection

During the exterior inspection (fig.4-1) the aircraft shall be checked for general condition, security of access doors and panels and filler caps and for hydraulic fluid, oil and fuel leaks, as well as for the following:



Walk around

Figure 4-1

A. NOSE

1. Canopy - CLOSED
2. External canopy handle - LOCKED
3. Left static port - Clean and free from obstructions
4. Windshield - Clean
5. Ventilation air intake - free from obstructions
6. Wheel and tire. Condition, inflation and alignment of slippage marks
7. Right static port - Clean and free from obstructions
8. OAT Probe - Clean and free from obstructions
9. Antennas (lower side) - Condition and security

B. RIGHT WING

1. Leading edge - Condition
2. Upper surface - Condition
3. Lower surface - Condition
4. Stall warning vane - Condition and movement
5. Mooring rope - Remove (if applicable)
6. Wing tank cap - Closed and locked
7. Navigation and anti-collision light - Condition
8. Tip tank - Condition and security
9. Tip tank cap - Closed and locked
10. Tip tank cocks - Closed. Check for fuel drips
11. Antenna (lower side) - Condition and security
12. Aileron - Condition
13. Airbrake - Condition
14. Wing flap - Condition and free play.

C. RIGHT MAIN LANDING GEAR

1. Wheel chock - In place
2. Wheel and tire - Condition, inflation and alignment of slippage marks
3. Landing gear leg - Condition
4. Fuse bolts - Condition
5. Brake and lines - Condition
6. Landing gear bottom door - Condition and locked
7. Landing gear lateral door - Condition.

D. FUSELAGE - Right side

1. Engine air intake (Naca inlet)-Condition and clear of obstruction
2. Engine air intake door - condition and movement
3. Engine cowling - Condition and security
4. Right exhaust pipe - Free and conditions

E. TAIL

1. Pitot tube - Cover removed and clear of obstruction
2. Fixed and movable surfaces - Condition and security
3. Anticollision light - Condition
4. VOR Antennas - Condition and security
5. Elevator springs - Condition and security

F. FUSELAGE - LEFT SIDE

1. Left exhaust pipe - Free and conditions
2. Engine cowling - Condition and security
3. Engine air intake door - Condition and movement
4. Engine air intake (Naca Inlet) - Condition and clear of obstruction

G. LEFT MAIN LANDING GEAR

1. Wheel chock - In place
2. Wheel and tire - Condition, inflation and alignment of slippage marks
3. Landing gear leg - Condition
4. Fuse bolts - Condition
5. Brake and lines - Condition
6. Landing gear bottom door - Condition and locked
7. Landing gear lateral door - Condition.

H. LEFT WING

1. Wing flap - Condition and free play
2. Airbrake - Condition
3. Aileron - Condition
4. Antenna (lower side) - Condition and security
5. Tip tank cocks - Closed. Check for fuel drips
6. Tip tank cap - Closed and locked
7. Tip tank - Condition and security
8. Navigation and anti-collision light - Condition
9. Wing tank cap - Closed and locked
10. Mooring rope - Remove (if applicable)
11. Lower surface - Condition
12. Upper surface - Condition
13. Leading edge - Condition.

4.3.3. Interior inspection

1. Parachute as required
2. Pilot's seat - Adjust
3. Pedals - Adjust
4. Safety harness - Condition and security of the locking device
5. Headphone and microphone - Connect
6. Oxygen hose - Connect (if required)
7. Parking brake - Set
8. Flight controls - Free

9. Pitot heat - OFF
10. DME - OFF
11. Altitude alerter - OFF
12. Radio 1 and 2 - OFF
13. VOR 1 and 2 - OFF
14. Transponder - OFF
15. ADF - OFF
16. Turn and slip - OFF
17. Attitude indicator - OFF
18. Lights (Landing - Navigation - Anticollision Internal) - OFF
19. Airbrakes - CLOSED
20. Hot air control - CLOSED
21. Defogger - CLOSED
22. Throttles friction - Adjust
23. Throttle - IDLE
24. Emergency throttle - Fully counter-clockwise

◆ CAUTION

If the throttle is not in the IDLE position, after the start up the engine will run immediately at RPMS higher then idle. This could damage the engine.

25. External power connected.

NOTE

In order to preserve the life of the battery, the engines start up is only to be done by the aircraft battery when an external power source 28VDC/200A is not available.

26. BATT switch - ON

Warning panel lights

27. GEN lights (Amber) - "ON"
28. OIL lights - "ON"
29. LOW PRESS light - "ON"
30. PUMP lights - "ON"
31. Lights:
    - FIRE
    - HIGH PRESS

    and engine instrument filaments: Press to TEST

Engine control panel

32. Fuel shut-off lights - "SHUT"
33. Engine MAST switches - OFF
34. Fuel BOOST switches - OFF
35. Engine TEST switches - OFF
36. Landing gear lights - Press to TEST.

INTERIOR INSPECTION FOR NIGHT FLIGHT

1. Instrument lights - Check
2. Position lights - Check
3. Strobe lights - Check
4. Flood light - Check
5. Landing light - Check

NOTE

Continous use of the landing lights for more than 5 minutes should be avoided.

4.3.4. Dry crank motoring

NOTE

Dry crank motoring is necessary each time unburned fuel is supposed to be present in the combustion chamber, such as after an aborted starting

1. Engine MAST switch - CHECK OFF
2. VENT button - Keep depressed as long as necessary (10 sec.max)

4.3.5. Starting the left engine

1. Left engine MAST switch - ON (engine will start automatically
2. EGT - Check within limits (860°C max then below 500°C)
3. RPM - Check
4. Oil pressure - check increasing
5. Fuel PUMP lights - check "OFF"
6. Oil light - check "OFF"

After start up

7. GEN switch - check "ON"
8. Generator lights - check:
   - Amber GEN L - "OFF"
   - Green L GEN - "ON"

NOTE

The amber light "ON" indicates the generator not connected to the MAIN busbar.
The green light "ON" indicates the generator is properly operating.

9. Voltage - check (27÷29 V)

4.3.6. Starting the right engine

1. Right engine MAST switch - ON
   (engine will start automatically)

NOTE

During the starting of the second engine the generator of the running engine is automatically disconnected from the MAIN bus bar and the amber GEN L lights is "ON" for about 10 seconds.

2. EGT - Check within limits (860°C max then below 500°C)
3. RPM - Check
4. Oil pressure - check increasing
5. Fuel PUMP lights - check "OFF"
6. Oil light - check "OFF"

After start up

7. GEN switch - chech "ON"
8. Generator lights - check:
   - Amber GEN R - "OFF"
   - Green R GEN - "ON"
9. Voltage - check (27÷29 Volts)
10. RPM and EGT - Stabilized
11. External power (if used) - Disconnect
12. Ammeters - check
13. Engine instruments - check within limits

4.3 7. Redundancy engine control box check

1. Breaker ENGINE MAIN BUS R - Pull
2. Right engine - check operative
3. Breaker ENGINE MAIN BUS R - Reset
4. Breaker ENGINE MAIN BUS L - Pull
5. Left engine - check operative
6. Breaker ENGINE MAIN BUS L - Reset

4.3.8. Emergency engine control box check

This check must be performed at the first flight of the day:

1. Left throttle - IDLE
2. L TEST switch - ON
3. PUMP NORM L light - Check "ON"
4. Left EMERGENCY THROTTLE clockwise to increase

NOTE

Emergency control box gives no correction for external temperature. Limitation for max RPM

as shown in fig. 4-2 must be monitored by the pilot.

5. Engine instruments - check within limits
6. Left EMERGENCY THROTTLE - Fully counter-clockwise - to the stop
7. L TEST switch - OFF
8. Right throttle - IDLE
9. R TEST switch - ON
10. PUMP NORM R light - check "ON"
11. Right EMERGENCY THROTTLE-clockwise to increase

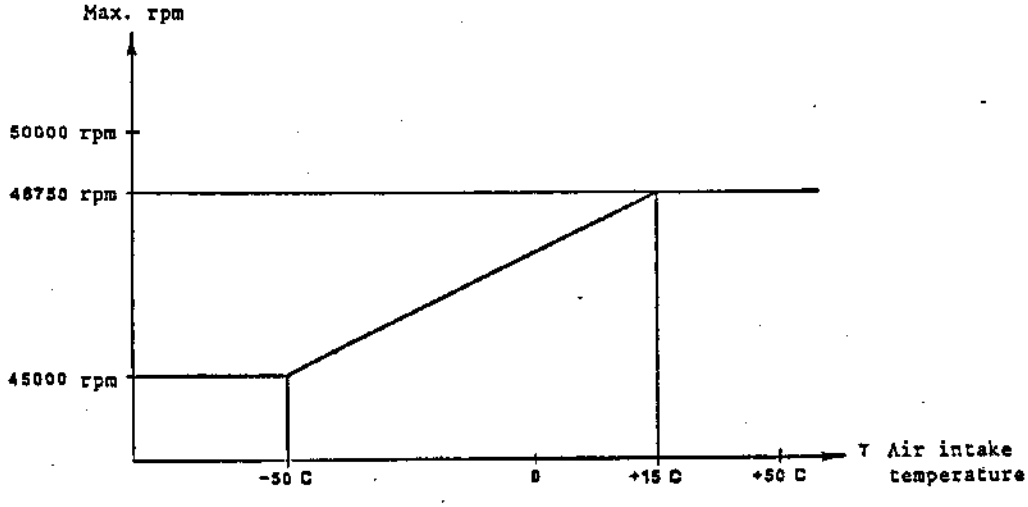
NOTE

Emergency control gives no correction for external temperature. Limitation of max RPM as shown in fig.4-2 must be monitored by the pilot.

12. Engine instruments - Check within limits
13. Right EMERGENCY THROTTLE - Fully counter-clockwise - to the stop
14. R TEST switch - OFF

4.3.9. Fuel filter check

1. LOW PRESS light - Check "OFF" (max 5' after engine starting)
2. L BOOST pump - Check "OFF"
3. Left throttle - Advance for 100% RPM
4. Fuel pressure - Check within limits (0.95 bar min)
5. Left throttle - IDLE
6. L BOOST pump - ON
7. BOOST pump - Check "OFF"
8. Right throttle - Advance for 100% RPM
9. Fuel pressure - Check within limits (0.95 bar min)
10. Right throttle - IDLE
11. R BOOST pump - ON



Speed Limitation in function of Air Intake temperature

Figure 4-2

4.3.10 Before taxiing

1. Avionic equipment - ON
2. Communication equipment - ON
3. NAV equipment - as required
4. Audio panel - as required
5. Lights - as required
6. Flaps control and instrument operation - Check
7. Airbrake operation, check - Set CLOSED
8. Trim control and instrument operation - Check
9. Radio call - as required

4.3.11 Taxiing

1. Wheel chocks - Remove
2. Parking brake - Release
3. Brakes - Check
4. Oxygen diluter - As required

CAUTION

The nose wheel is mechanically linked to the rudder pedals through the steering system. Do not use differential braking to turn. Such an action could damage the nose wheel steering mechanism. Brakes must be used evenly for slowing and stopping aircraft only. Steering must be accomplished by use of rudder pedals only.

NOTE

See Figure 1-2 for the minimum turning radius and clearance required.

4.3.12. Before take-off checks

1. Flight controls - Check free
2. Trim - Set for take-off position
3. Airbrakes - Check closed
4. Flaps - Set DOWN
5. Engine instruments - Check within green sectors
6. Flight instruments - Check
7. Fuel quantity - Check
8. Safety harness - LOCKED
9. Canopy - Closed and Locked

4.4. TAKE OFF CHECKS

4.4.1. Take-Off

1. Aircraft - aligned with runway
2. Attitude and heading indicators - Check and adjust
3. Brakes - Apply
4. Throttle - Full (Max 2 min.)
5. Engine parameters - Monitor within limits (EGT: 860°C max - Oil Temp. 140°C max)
6. Brakes - release
7. Direction - Mantain by nose wheel sterring
8. At 78 KIAS - Rotate a/c to take-off attitude
9. Mantain attitude (a/c light off at 80-85 KIAS)

After take-off:

10. Brakes-apply
11. Landing gear - UP and check

NOTE

Landing gear retraction time is 7 seconds.

12. 120 KIAS - Flaps up and position check.
13. RPM - Reduce (100%)
14. Trim - As required

4.5. IN FLIGHT CHECKS

4.5.1. Climb

On climb-out after take-off, it is recommended that the best angle of climb speed be maintained only if obstacle clearance is a consideration.

1. Start climb at selected speed, RPMs 100%
   Best rate of climb speed 157 KIAS
   Best angle of climb speed 141 KIAS
2. Oxygen (Pressure and blinker)-Check (if applicable)
3. EGTs (within limits: 820°C max) - Check
4. Oil pressure (within limits: 1.5 bar min) - Check
5. Oil temperature (within limits: 140°C max)- Check
6. Altimeter - Set as required
7. Windshield defroster - As required
8. Throttle - As required

4.5.2. Before landing

NOTE

Airbrakes must be deployed after flaps lowering to avoid lift drop in case of airbrakes retraction.
Airbrakes down and flaps up is not a normal approach configuration.

1. Speed - Reduce to 140 Kt
2. Flaps - DOWN
3. Landing gear - DOWN
4. Airbrakes - OPEN
5. Approach speed (flaps and airbr.) - 95 Kts
6. Throttle - As required to 95 Kts
7. Landing light - As required

4.5.3. Balked landing

1. Throttle - Full forward
2. Airbrakes - Close
3. Continue normal approach until engines are at max thrust and speed increase
4. Establish take-off attitude with positive rate of climb
5. Landing gear - UP
6. 120 Kts - Flaps UP
7. RPM - Reduce to max cont.thrust
8. Trim - As required

4.5.4. Landing

1. Start a gradual flare out
2. Touchdown on main wheels
3. Use brakes only to reduce speed
4. Maintain direction with nose wheel steering

4.5.5. Crosswind approach and landing

If a crosswind landing is necessary approach with increased speed (about 5 Kts).

1. Lower the wing into the wind to maintain the runway direction

Before touchdown

2. Align the wheels with the runway.

4.6. POST-FLIGHT CHECKS

4.6.1. After landing

1. Landing light - OFF
2. Airbrakes - CLOSE

3. Flaps - UP
4. Pitot heating - OFF
5. Windshield defroster - CLOSE
6. Trim - NEUTRAL
7. Transponder and nav.systems - OFF

4.6.2. Engines shut down

1. Parking brake - APPLIED
2. Throttle - IDLE
3. Radios - OFF
4. Attitude indicator - OFF
5. Turn and slip indic. - OFF
6. Internal and external lights - OFF
7. L and R booster pumps - OFF
8. Stabilize EGT - CHECK
9. Engine MAST - OFF (2)
10. Engine turn to stop (52-20") - CHECK
11. Battery - OFF

4.7. OXYGEN SYSTEM

4.7.1. Generals

The pilots receive oxygen from the diluter demand oxygen supply system, which mixes the proper ratio of oxygen and cockpit air a given altitude.
A diluter demand oxygen regulator on each side of the cockpit provides the pilots with individually regulated control of the oxygen system.
The control lever has three positions:

- NORMAL: for delivery of automatically diluted oxygen at pilot demand
- 100%: for delivery of 100%, oxygen

- EMERGENCY: for delivery of 100% oxygen at positive pressure

WARNING

If any symptons occur suggestive of the onset hypoxia, immediately set the control lever to the EMERGENCY position and descend below 10.000 ft.
Whenever carbon monoxide or other noxious gas is present or suspected set the diluter control lever to 100% and continue breathing indiluted oxygen until the danger is no longer present.

4.7.2. Oxygen duration

The oxygen supply is provided by a 6.7 liters pressure cylinder.
With the cylinder charged to 2150 PSI the oxygen duration at 25000 Ft for a crew of two is: 1h 45'
The duration time is doubled when one pilot is using oxygen.

4.7.3. Oxygen masks

Mask type MBU-5/P or similar can be used interfaced with aircraft provisions.
Oxygen masks are not part of the aircraft, they are part of the crew equipment.

4.8. SPIN CHARACTERISTICS

4.8.1. Spin

The aircraft has been approved for intentional spin with the gear and flaps up only.
Spins in any other configuration or inverted spins are prohibited.

4.8.2. Spin entry

A spin may be entered at a speed 5 KTS above stall by rapidly applying full back stick and full rudder in the desired direction of the spin and mantaining full back stick.

4.8.3. Spin behaviour

After rudder application the aircraft yaws for about 30°, then the nose moves down and the wings begin to rotate.
After 1/4 turn, the nose is 45° down and the wings are 90° rotated.
A tendency to nose up to 15° may be manifested during the first turn.
The time for the first turn is 4 secs.
After the first $1\frac{1}{4}$ turn the spin is stabilized with the nose down (45°÷60°).
The rotation is rapid (3 secs) per turn wide and sudden oscillation.
The altitude loss for each turn is 450÷550 Ft.

4.8.4. Spin recovery

To effect the spin recovery, apply positive rudder opposite to spin rotation, mantaining neutral aileron and full back stick.
After this phase the yaw rotation is reduced and the nose moves down.

Release the stick forward to neutral position and centralize the rudder control.
The aircraft will recover from the spin within 1/2 turn after the neutral stick is applied.

CAUTION

The stick should be released for the necessary amount only, to avoid too steep attitude and to reduce the altitude loss during the dive pull up phase.
Inverted attitude recovery may be obtained by excessive forward stick application.

SECTION 5
PERFORMANCE

SECTION 5

PERFORMANCE

5.1. GENERAL

This section provided performance information applicable to the C22J required by certification regulations.
The performance informations, provided by the performance charts in this section, are based on measured Flight Test Data corrected to I.S.A. Standard Day conditions and analytically expanded for various parameters of weight, altitude, temperature.

5.3. SUMMARY OF REQUIRED PERFORMANCE

The following performance figures are based on measured Flight Test Data corrected to I.S.A.Standard Day conditions and to the Maximum Takeoff Weight, for takeoff data and to the maximum landing weight for landing datum.

a) Takeoff Distance over 50 ft obstacle
(95 KIAS, 18° Flaps, Sea Level) 950 m
(3117 ft)

b) Takeoff Rate of Climb
(141 KIAS, 18° Flaps, Sea level) 1600 ft/'

c) Landing Distance from 50 ft Obstacle
(95 KIAS, 18° Flaps, Airbrakes Open,
Sea Level) 825 m
(2707 ft)

5.5. INSTRUMENT CALIBRATION

5.5.1. Airspeed calibration - Normal system

5.5.2. Reserved

5.5.3. Altimeter correction - Normal system

5.5.4. Altimeter correction - Alternate system

5.5.1. Airspeed calibration - Normal system

NOTE:

INDICATED AIRSPEED ASSUMES ZERO INSTRUMENT ERROR

FLAPS UP	KIAS	110	130	150	170	200	230	260
	KCAS	109.5	129	148.8	165.5	198	227.3	256.7
FLAPS DOWN	KIAS	85	95	105	115	125	135	145
AIRBRAKES OPEN	KCAS	84.6	94	103.6	113	122.5	132	141
FLAPS DOWN	KIAS	90	100	110	120	130	140	150
AIRBRAKES CL.	KCAS	90.4	98.3	106.3	115.1	124.1	134	148.5

KIAS = INDICATED AIRSPEED IN KNOTS

KCAS = CALIBRATED AIRSPEED IN KNOTS

AIRSPEED CALIBRATION — NORMAL SYSTEM

NOTE: INDICATED AIRSPEED ASSUMES ZERO INSTRUMENT ERROR

EXAMPLE:

IAS	132 KNOTS
FLAPS	UP
CAS	131 KNOTS

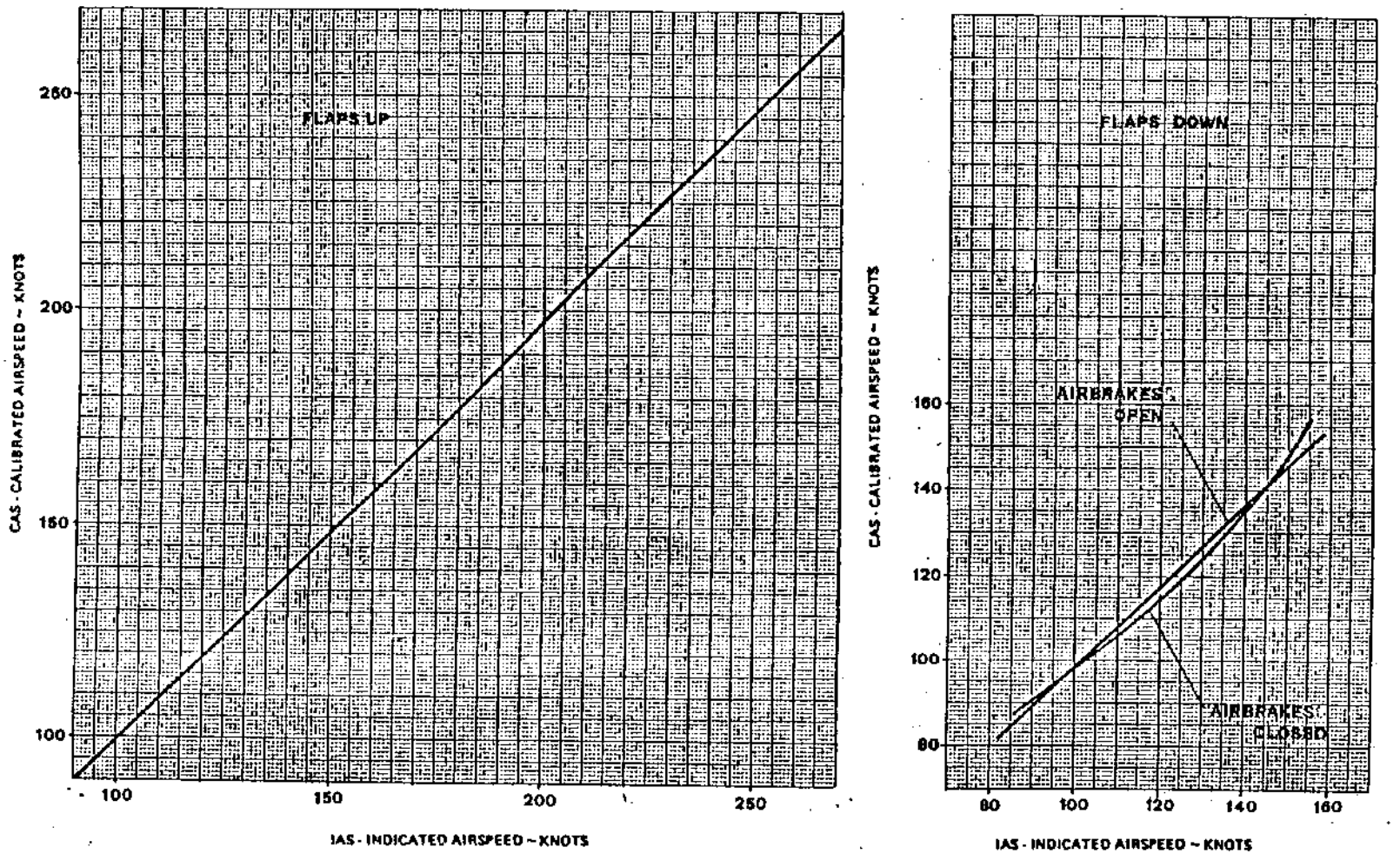


Figure 5-5-1

5.5.3. Altimeter correction - Normal system

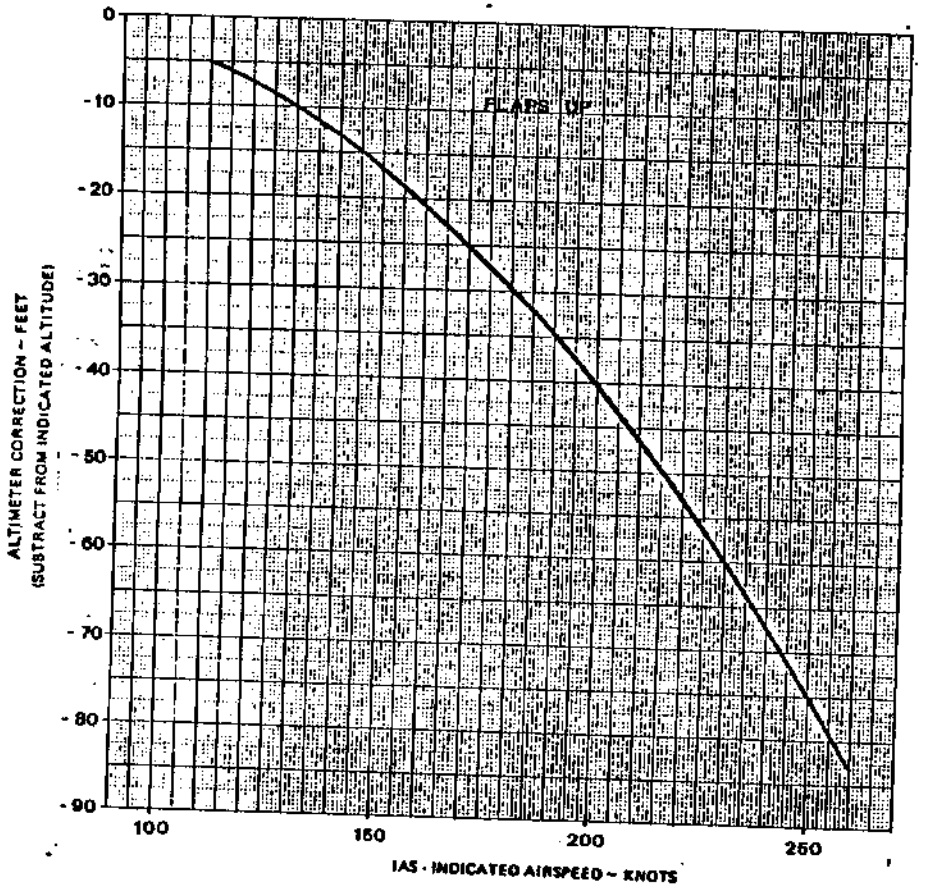
NOTE:

1. ADD CORRECTION TO INDICATED ALTIMETER READING
2. IAS AND INDICATED ALTITUDE ASSUME ZERO INSTRUMENT READING

FLAPS UP	KIAS	110	130	150	170	200	230	260
	FT	-5	-10	-17	-25	-40	-60	-83
FLAPS DOWN AIRBRAKES OPEN	KIAS	85	95	105	115	125	135	145
	FT	-4	-8	-13	-21	-28	-37	-47
FLAPS DOWN AIRBRAKES CLD	KIAS	90	100	110	120	130	140	150
	FT	3	-15	-36	-52	-68	-74	-20

ALTIMETER CORRECTION — NORMAL SYSTEM

NOTE: INDICATED AIRSPEED AND INDICATED ALTITUDE ASSUME ZERO INSTRUMENT ERROR



EXAMPLE:

IAS	130KNOTS
FLAPS	30%
ALTIMETER CORRECTION	-68 FEET (SUBTRACT FROM INDICATED ALT)

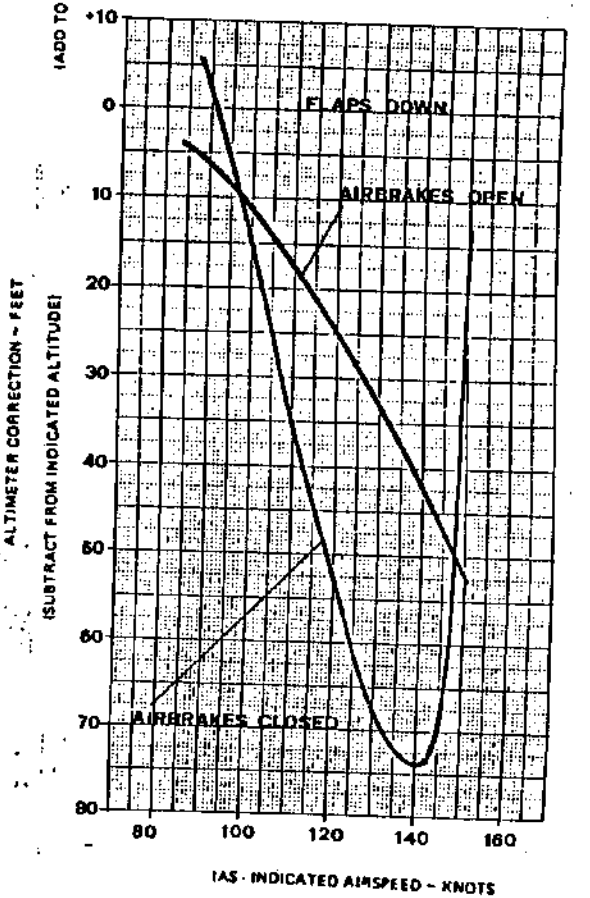


Figure 5-5-3

5.5.4. Altimeter correction - Alternate system

NOTE:

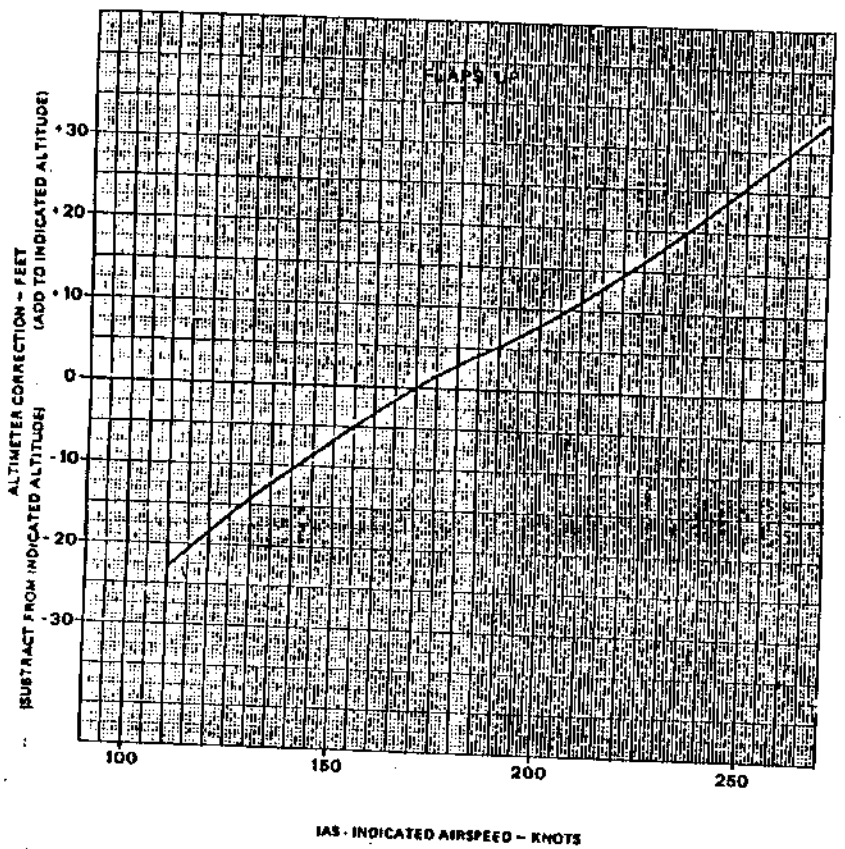
1. ADD CORRECTION TO INDICATED ALTIMETER READING
2. IAS AND INDICATED ALTITUDE ASSUME ZERO INSTRUMENT READING

CORRECTION TO BE ADDED - IN FEET

FLAPS UP	KIAS	110	130	150	170	200	230	260
	FT	-23	-14	-7	0	+8	+18	+30
FLAPS DOWN AIRBRAKES OPEN	KIAS	85	95	105	115	125	135	145
	FT	+55	+52	+50	+48	+47	+46	+46
FLAPS DOWN AIRBRAKES CLD	KIAS	85	95	105	115	125	135	145
	FT	-4	+2	+8	+16	+26	+40	+56

ALTIMETER CORRECTION — ALTERNATE SYSTEM

NOTE: INDICATED AIRSPEED AND INDICATED ALTITUDE ASSUME ZERO INSTRUMENT ERROR



EXAMPLE:

IAS 230 KNOTS
FLAPS UP

ALTIMETER CORRECTION +18 FEET
(ADD TO INDICATED ALTI)

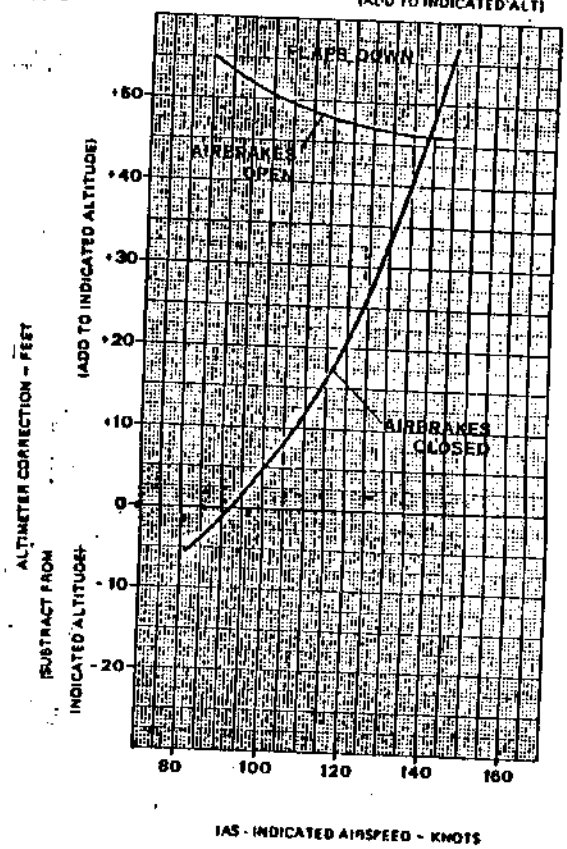
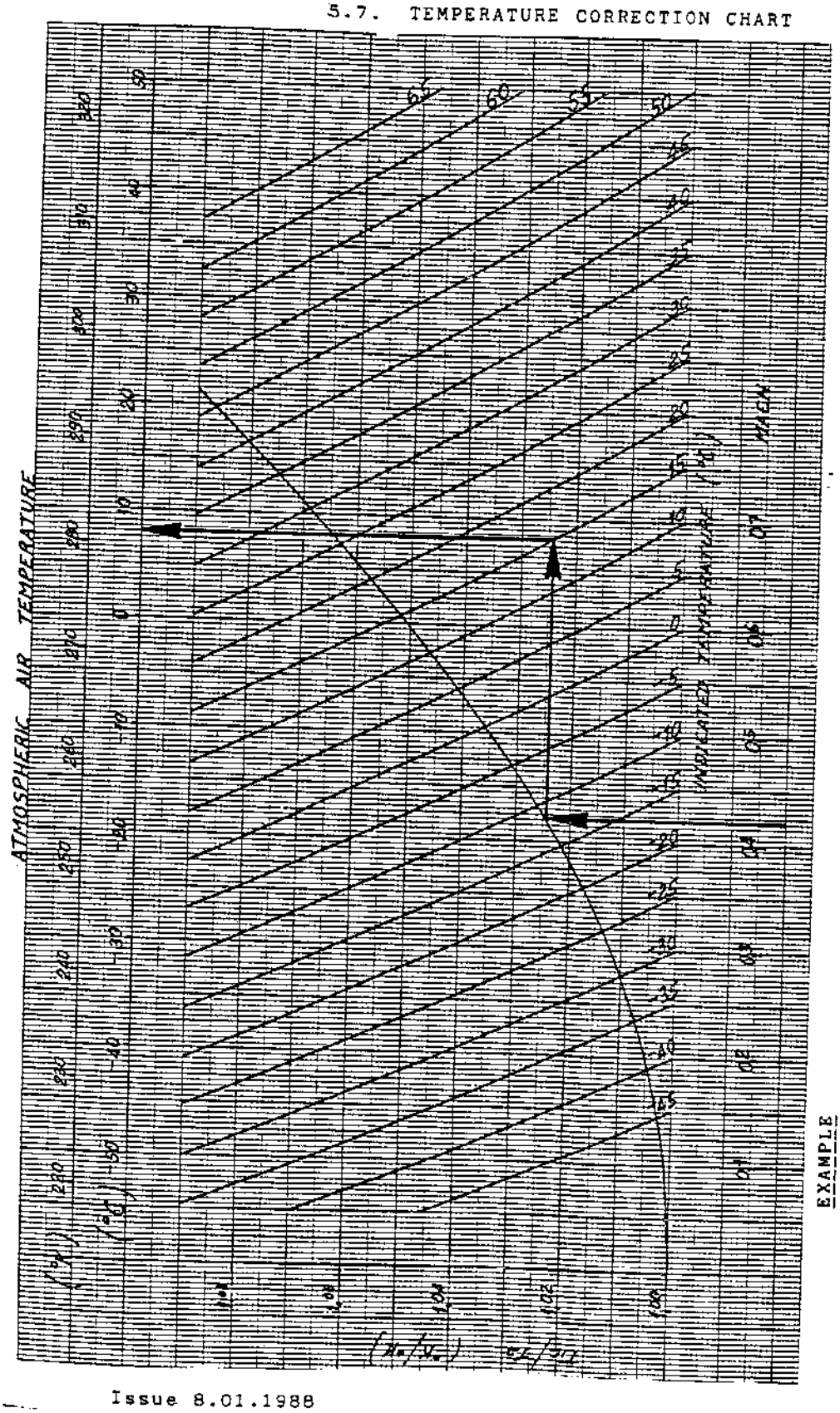


Figure 5-5-4

5.7. TEMPERATURE CORRECTION CHART



5.9. WIND COMPONENT

Maximum demonstrated crosswind velocity for take off and landing is 18 knots.
Refer to Figure 5.9. to compute crosswind component.

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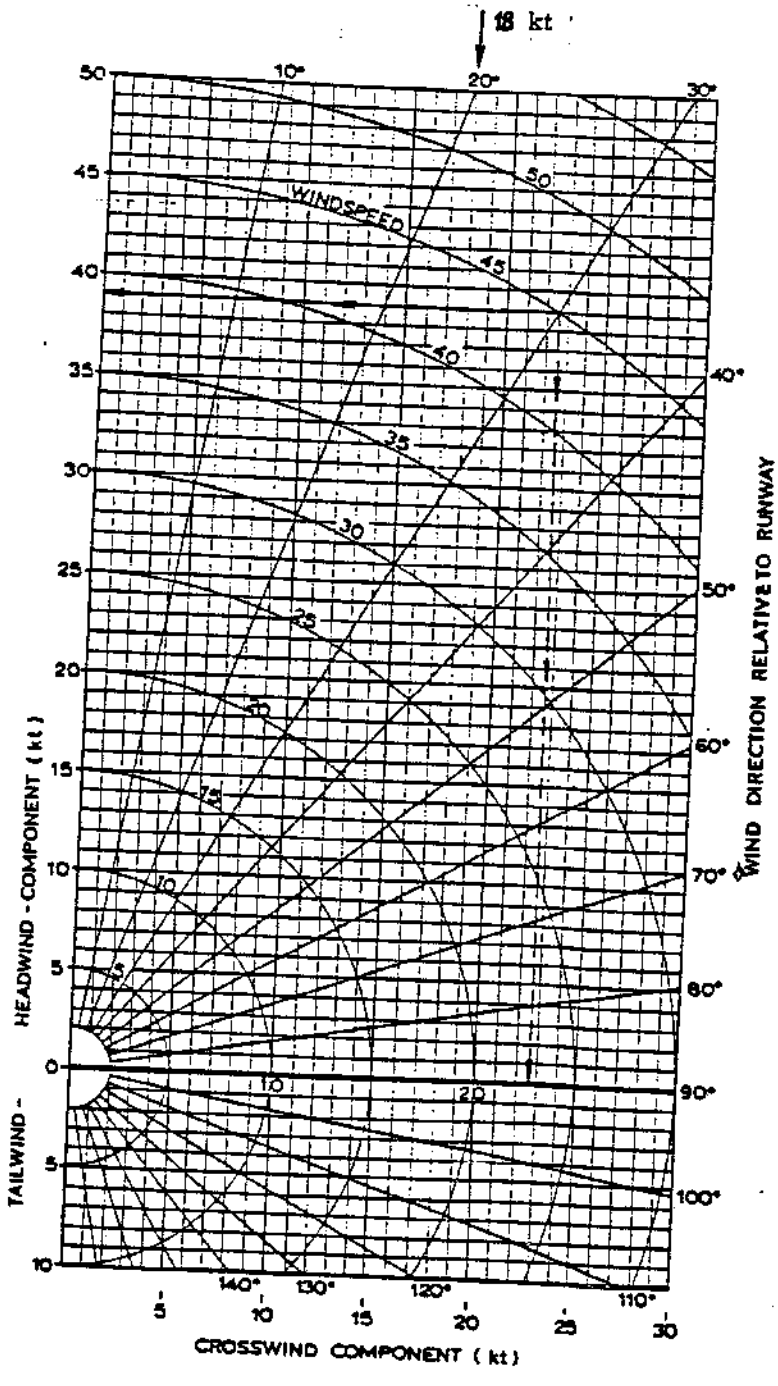
WIND COMPONENTS

FOR TAKE-OFF AND LANDING

MAX CROSS WIND COMPONENTS



5.11. STALL SPEEDS

Associated conditions	
Power	Idle
Landing gear	Up or Down
Center of gravity	Most forward
Weight	1255 kg

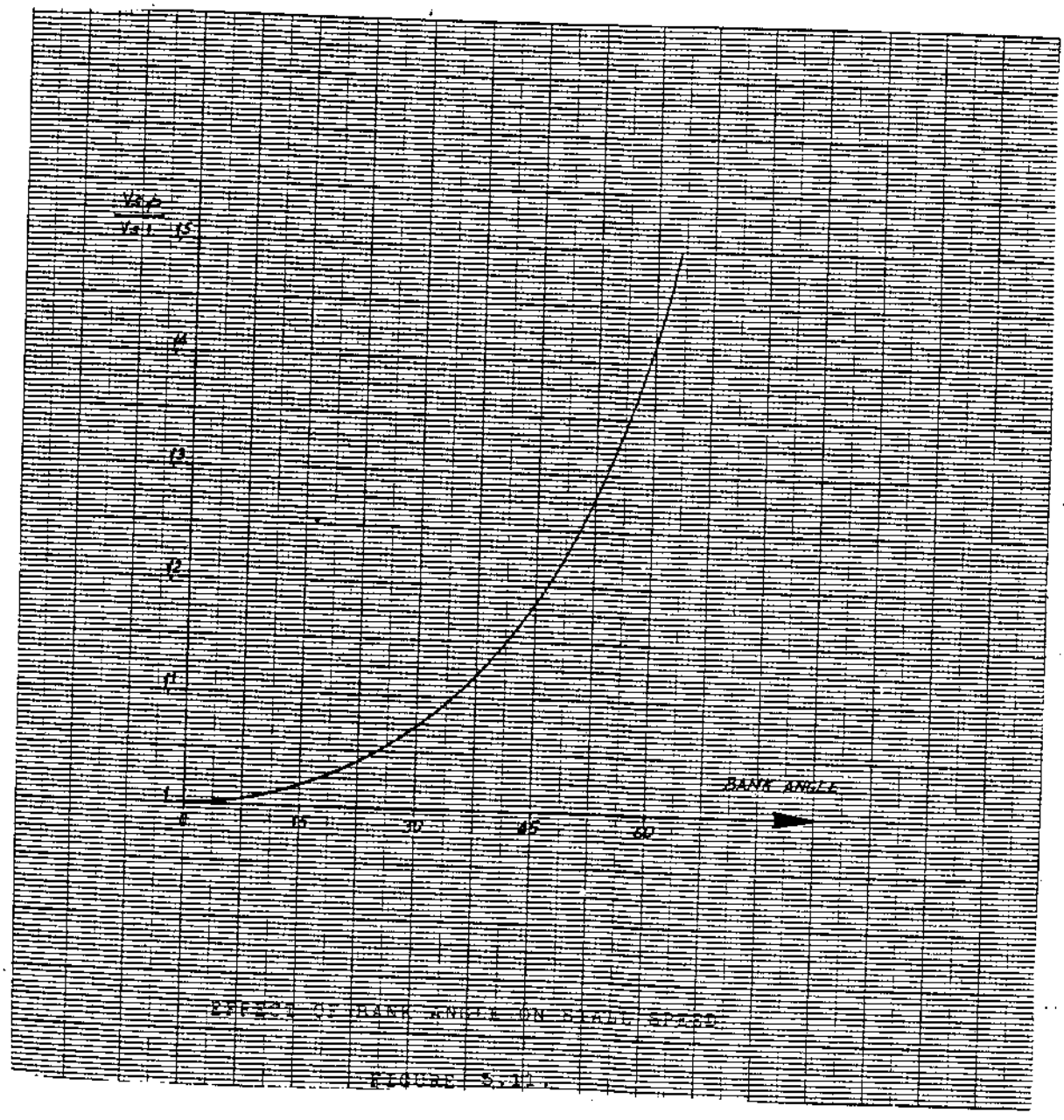
Example		
Landing gear		Down
Flaps		Down
Airbrakes		Open
Angle of bank		15°
Stall speed in level flight	70	KIAS
Vs_{ϕ}/Vs_1		1.02
Stall speed in turning flight	71.4	KIAS

NOTES:

1. Maximum altitude loss during stall recovery is approximately 400 Ft.
2. Maximum nose down pitch attitude and altitude loss during recovery from single engine stalls are approximately 20° and 400 feet respectively.
3. Effect of bank angle on stall speed see Figure 5.8.

FLAP	LANDING GEAR	AIRBRAKES	KIAS	KCAS
UP	RETRACTED	CLOSED	79	83
DOWN	EXTENDED	CLOSED	73	78
DOWN	RETRACTED	CLOSED	75	78
DOWN	EXTENDED	OPEN	70	73.5

KIAS = Indicated airspeed in knots
KCAS = Calibrated airspeed in knots



EFFECT OF BANK ANGLE ON STALL SPEED

FIGURE 5.11.

$V_{S\phi}$ = STALL SPEED IN TURNING FLIGHT

V_{S_1} = STALL SPEED IN LEVEL FLIGHT

5.13. TAKE-OFF DISTANCE OVER 50 FT OBSTACLE

See Figure 5.13.

Associated Conditions

Thrust	Takeoff (N = 104%)
Flaps	Down
Airbrakes	Closed
Runway	Level, Hard Dry
Speed	Rotate 78 Kias
	Screen 95 Kias

Example

Air Temperature	20°C
Altitude	2000 Ft
Takeoff weight	1175 kg
Wind	5 Kt Head
Takeoff distance	920 M

5.15. CLIMB PERFORMANCE

5.15.1. 2 Engines operative climb - Flaps down

5.15.2. Best rate of climb speed - Flaps down

5.15.3. Best angle of climb speed - Flaps down

5.15.6. 2 Engines operative climb - Flaps up

5.15.7. Best rate of climb speed - Flaps up

5.15.8. Best angle of climb speed - Flaps up

5.15.11. 1 Engine inoperative climb

5.15.16. 2 Engines operative climb - Flaps and landing gear down

5.15.18. Best angle of climb speed - Flaps and landing gear down

5.15.1. 2 Engines operative climb - Flaps down

Associated Conditions

Thrust	Continuous (N=100%)
Flaps	Down
Airbrakes	Closed
Best rate of climb speed	141 KIAS

Example

Outside Air Temperature	12°C
Altitude	4000 Ft
Rate of Climb	1330 Ft/'

See Figure 5-15-1

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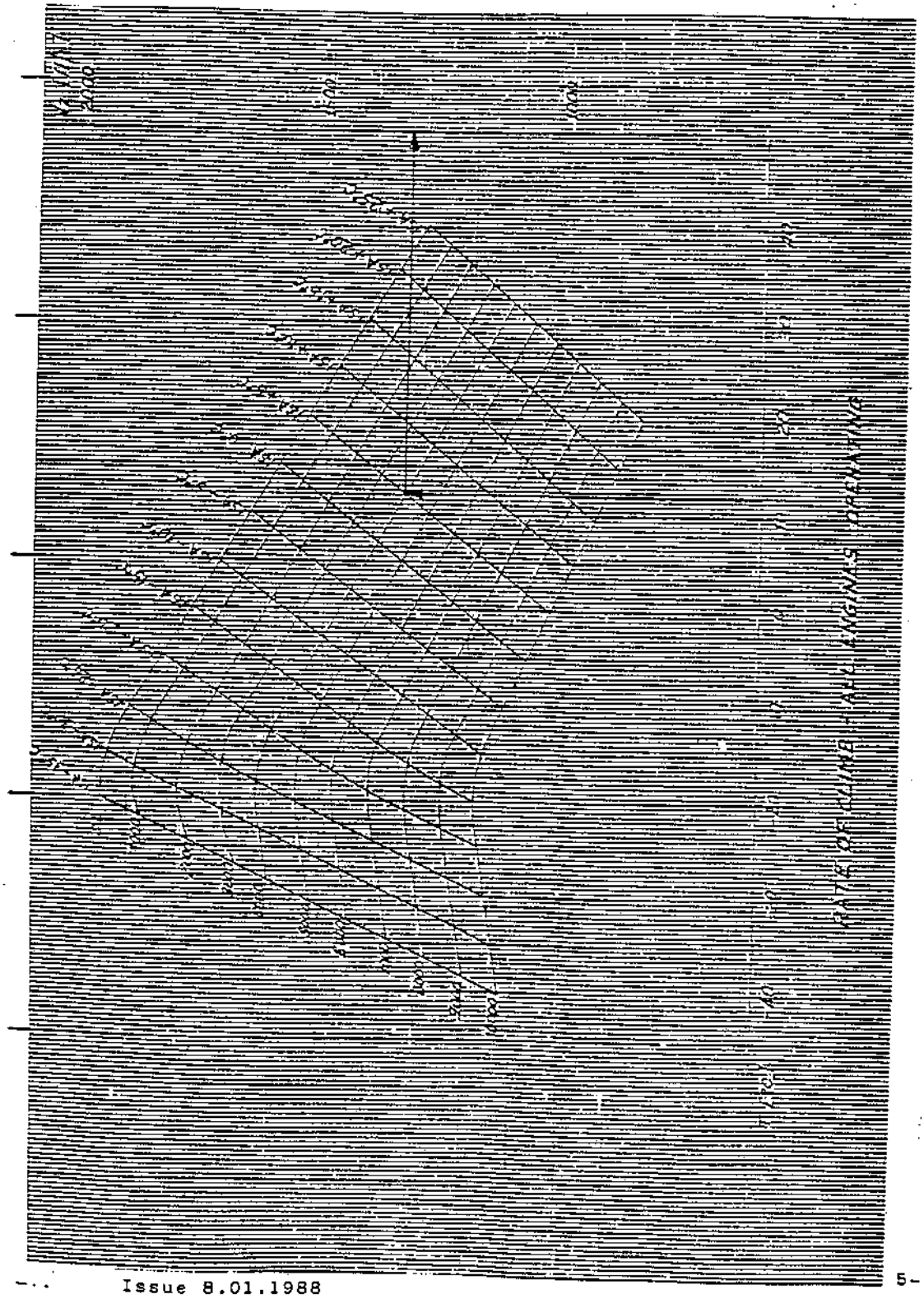
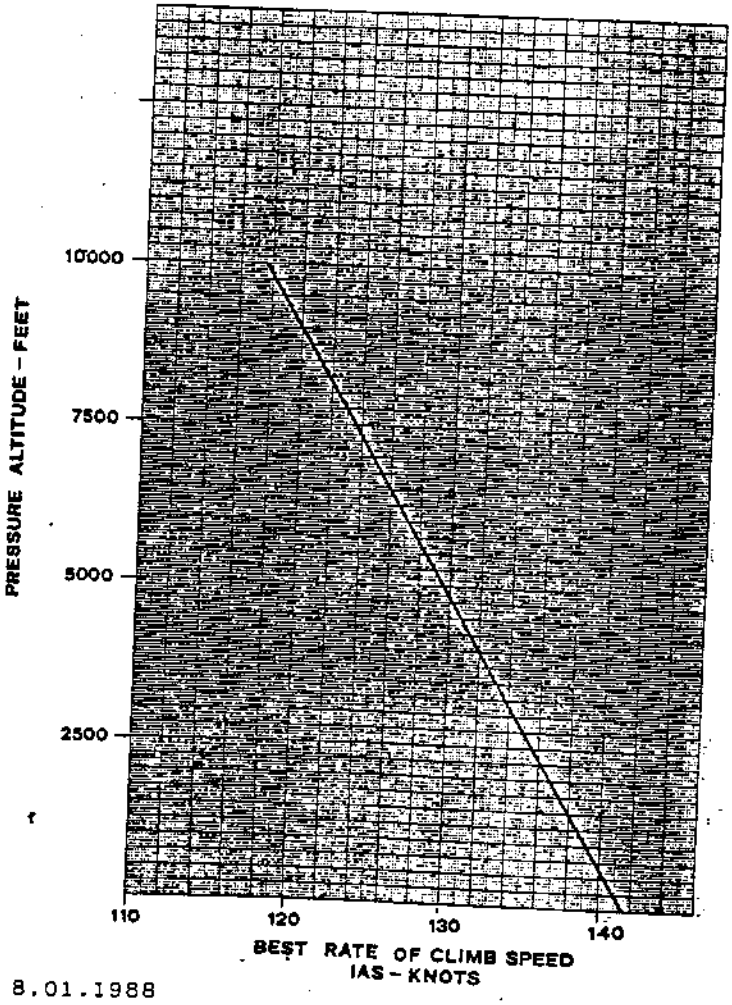


Figure 5-15-1

5.15.2. Best rate of climb speed - Flaps down

Associated Conditions

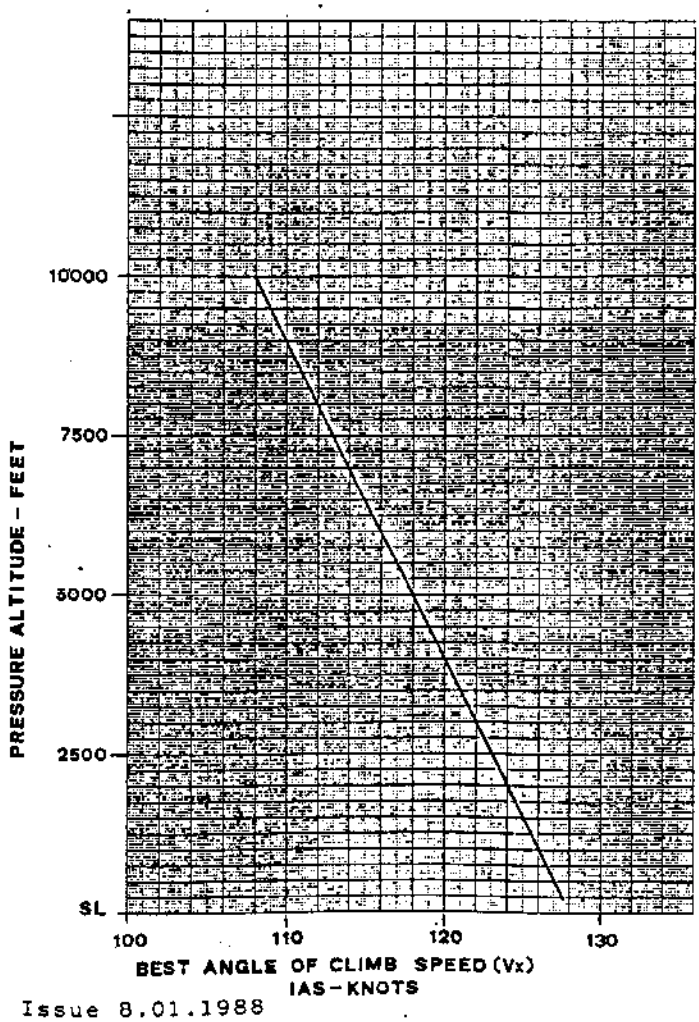
Thrust	Continuous (100%) 2 Engines
Flaps	Down
Airbrakes	Closed
Landing gear	Retracted
Weight	Maximum takeoff
Atmosphere	Isa Std day



5.15.3. Best angle of climb speed - Flaps down

Associated Conditions

Thrust	Continuous (100%)
	2 Engines
Flaps	Down
Airbrakes	Closed
Landing geag	Retracted
Weight	Maximum takeoff
Atmosphere	Isa Std day



5.15.6. 2 Engines operative climb - Flaps up

To be issued.

ENGINES OPERATING CLIMB

N = 100%

FLAPS UP

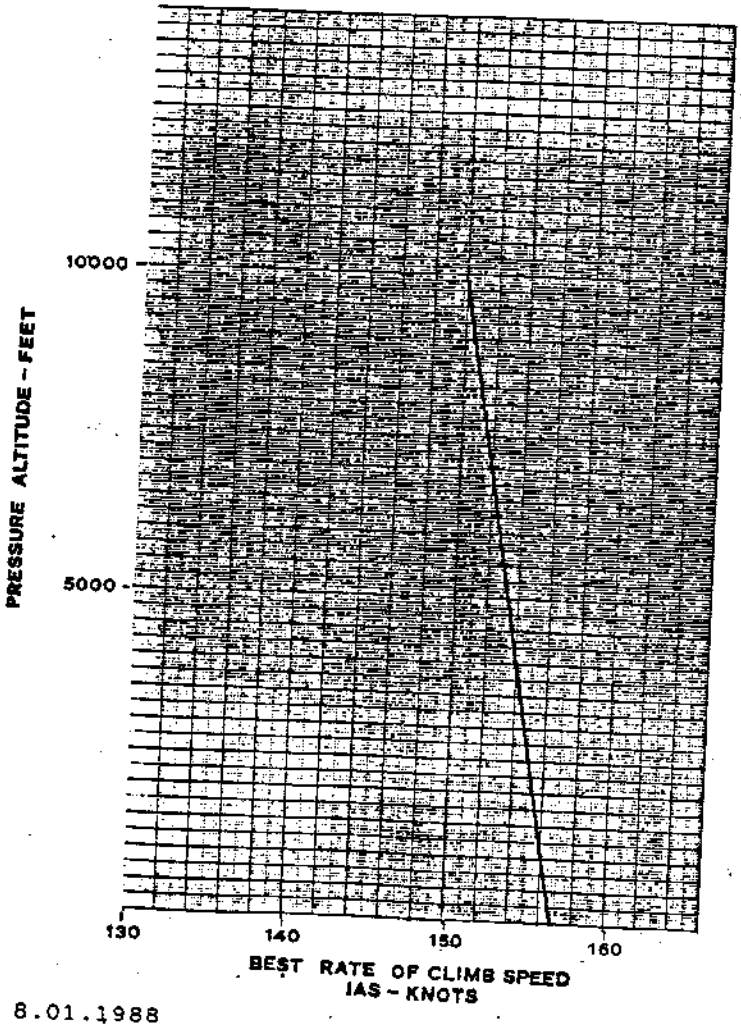
PERFORMANCE CHART: To be issued

FIG. 5-15-6

5.15.7. Best rate of climb speed - Flaps Up

Associated Conditions

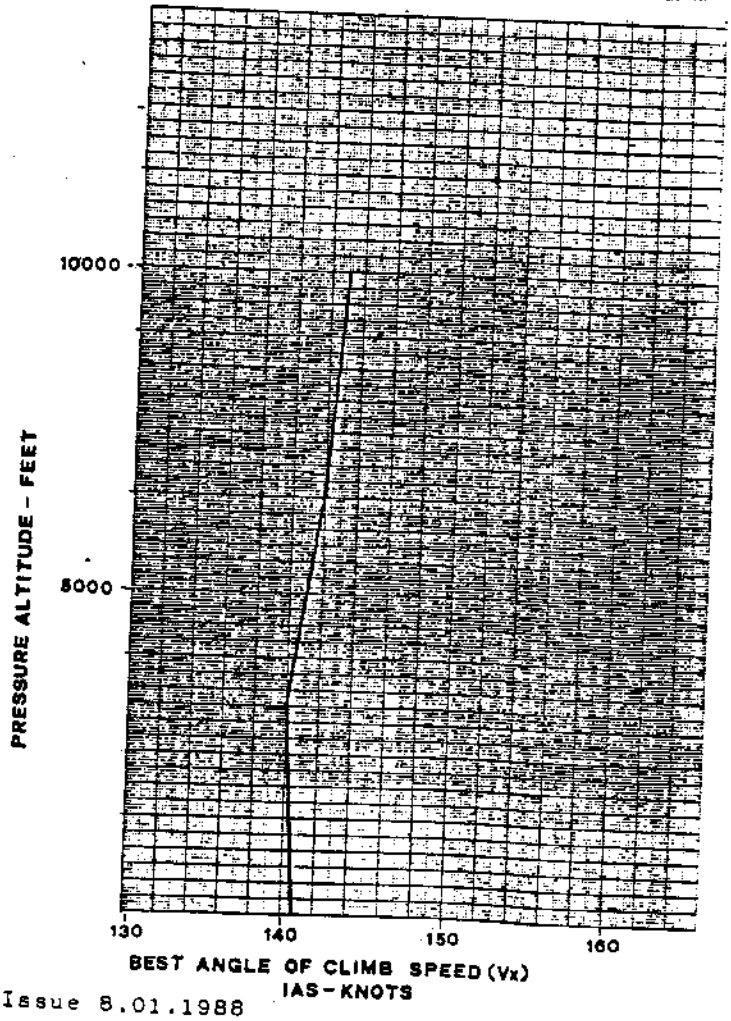
Thrust	Continuous (100%) 2 Engines
Flaps	Up
Airbrakes	Closed
Landing gear	Retracted
Weight	Maximum takeoff
Atmosphere	Isa Std day



5.15.8. Best angle of climb speed - Flaps Up

Associated Conditions

Thrust	Continuous (100%) 2 Engines
Flaps	Up
Airbrakes	Closed
Landing geag	Retracted
Weight	Maximum takeoff
Atmosphere	Isa Std day



5.15.11. I Engine inoperative climb

See Fig. 5-15-11.

Associated Conditions

Thrust	Continuous (N=100%)
Flaps	0°
Best rate of climb speed	124 KIAS at sea level
	114 KIAS at 14000 ft
	Linear variation between S.L. and 14000 Ft

Example

Outside air temperature	20°C
Altitude	2000 Ft
Weight	1100 Kg
Rate of climb	360 Ft/'

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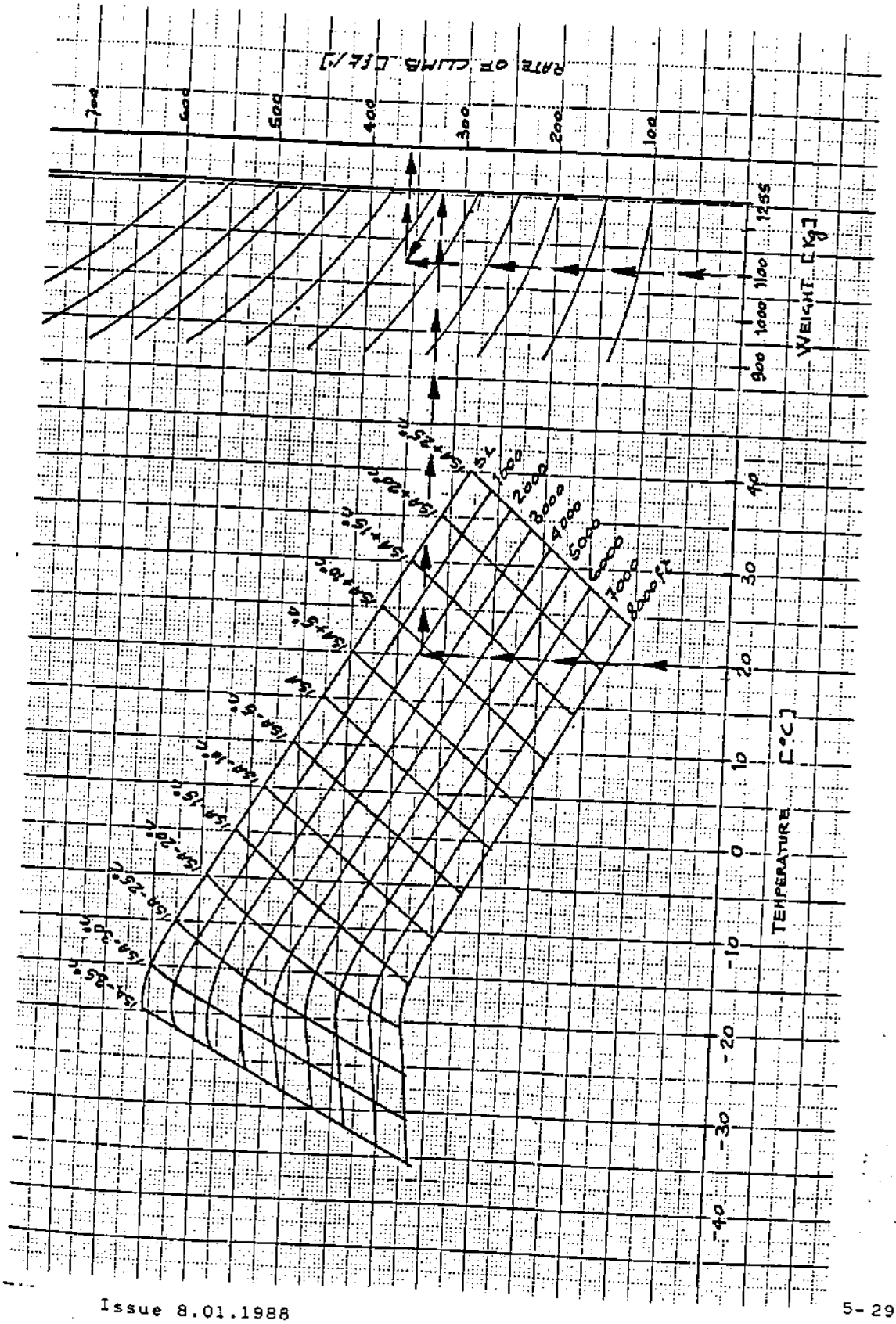


FIGURE 5-15-11

5.15.16. 2 Engines operative climb - Flaps and landing gear down

To be issued.

2 ENGINES OPERATIVE CLIMB
(Balked landing conditions)

To be issued.

FIG. 5-15-16

5.15.18 Best angle of climb speed - Flaps and landing gear down

Associated conditions:

Thrust	Continuous (100%) 2 Engines
Flaps	Down
Airbrakes	Closed
Landing gear	Extended
Weight	Maximum takeoff
Atmosphere	Isa Std day - 5000 ft altitude
Speed	105 KIAS
Rate of climb	863 ft/'

5.17. LANDING DISTANCE OVER 50 FT OBSTACLE

See Fig. 5.12.

Associated conditions

Thrust	Idle
Flaps	Down
Airbrakes	Open
Surface	Level, Hard, Dry
Breaking	Maximum effective
Screen speed	95 Kias
Weight	1172 kg

Example

Outside Air temperature	25°C
Altitude	2000 Ft
Weight	1100 Kg
Wind	5 Kt Head
Landing distance	705 m

SECTION 6

WEIGHT AND BALANCE

R.A.I. Approval N. 240.495/T Date 8.04.88

Issue 8.01.1988

SECTION 6

WEIGHT AND BALANCE

6.1. INTRODUCTION

This section contains the necessary information and procedures for correct loading and center of gravity calculation of the airplane.
This section also contains the procedures to establish the weight and balance for flight and describes the arms and weights of all equipment installed on the airplane. Weight and Balance limitations specified in Section 2 must never be exceeded and it is the pilot's responsibility to ensure that the airplane is loaded within the limits before each flight.
Center of gravity is a determining factor for handling characteristics for take-off and longitudinal static stability.
A properly loaded airplane will provide good performance within the flight envelope.
Using the running empty weight and C.G. location, the pilot can easily determine the weight and C.G. position for the loaded airplane by computing the total weight and moment and then determining whether they are within the approved envelope.

6.3. WEIGHT AND BALANCE DATA RECORDS

The running empty weight and corresponding C.G. may be obtained by the figure A6-3 of Appendix A.

6.5. WEIGHT AND BALANCE DETERMINATION FOR FLIGHT

NOTE

It is the responsability of the pilot and aircraft owner to ensure that the airplane is loaded properly.

The weight and balance at takeoff are to be computed as follow:

a) Using the values of Fig. 6.1. add the weight and moment of all items to be loaded to the Running Empty Weight on the Weight and Balance Form (Figure 6.2.).

b) Compute the total weight and moment and determine the C.G. location.

c) Locate on Figure 6-3 - Center of Gravity Envelope the load condition. If the point falls within the envelope, the loading meets the weight and balance requirements.

OCCUPANTS		FUEL			
Weight (kg)	Moment (kg.m)	Liters	Weight (kg) 0.8 kg/l	MOMENT (kg.m) Main Tanks	Tip Tanks
55	82.5	20	16	38	40
60	90	40	32	76	80
65	97.5	60	48	113	119
70	105	80	64	151	159
75	112.5	100	80	189	199
80	120	120	96	227	238
85	127.5	137.5	110	260	273
90	135	140	112	264	
		160	128	302	
		180	144	340	
		200	160	378	
		220	176	415	
		240	192	453	
		260	208	491	
		275	220	519	

Figure 6-1

WEIGHT AND BALANCE LOADING FORM

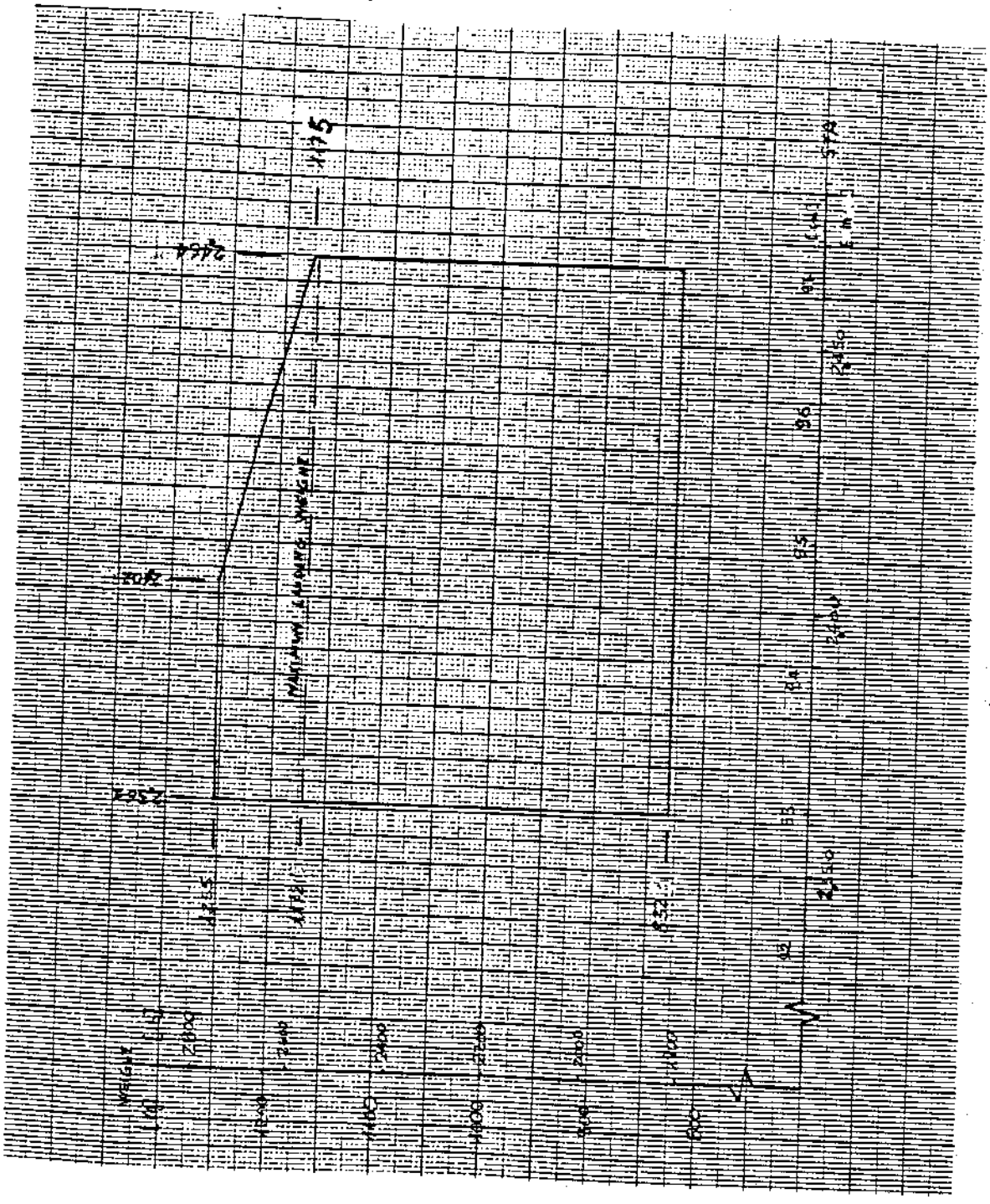
	WEIGHT	MOMENT (kg.m)
Running Empty Weight (as per Fig.A6.3)		
Pilot's Seat		
Copilot's Seat		
Baggage		(1)
Main Wing Tanks Fuel		
Tip Tanks Fuel		
Other		
Totals		

C.G. STATION (Moment/Weight)		

Totals must be within approved weight and C.G. limits(Fig.6-3). It is the responsibility of pilot to insure that the airplane is loaded properly.

Note (1): The influence on C.G. is negligible.

Figure 6- 2



Center of Gravity Envelope
Figure 6-3

6.7. SIMPLIFIED PROCEDURE

The following simplified procedure may also be used:

knowing the running empty weight and moment the figure 6-4 and 6-5 gives the maximum and minimum useful loads that can be carried on the Aircraft with any possible distribution among pilots and baggage without falling out the weight-moment envelope regardeless of the fuel quantity on board.

a) Running empty weight 780 kg
moment 1990 kgm

From fig. 6-4
Maximum payload 145 kg

From fig. 6-5
Minimum payload 65 kg

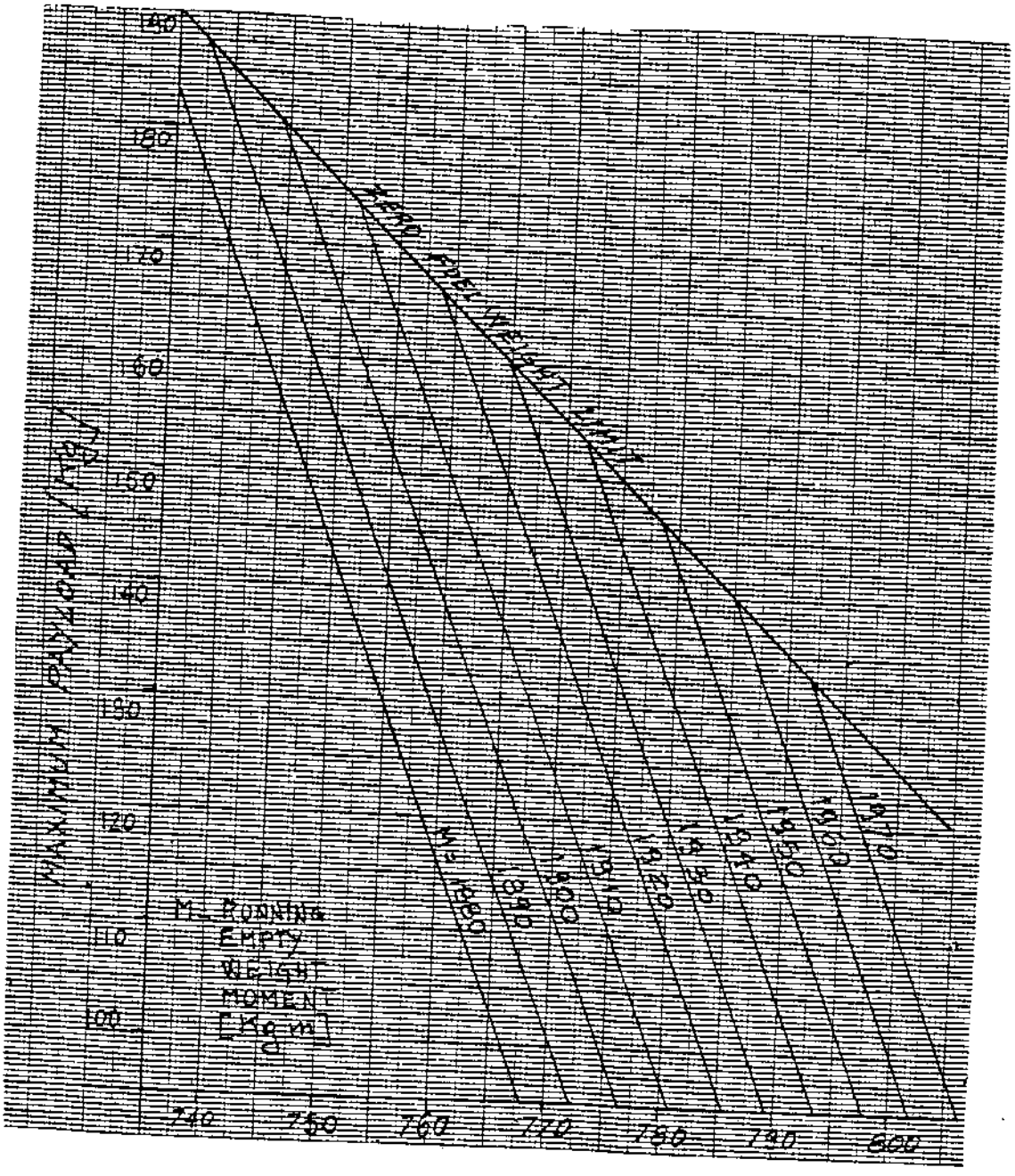

MAX FUEL WEIGHT LIMIT
MAX TAKE OFF WEIGHT
MAX LANDING WEIGHT
M.L. RUNNING EMPTY WEIGHT MOMENT [Kg m]
740
750
760
770
780
790
800
180
170
160
150
140
130
120
110
100

Figure 6-4

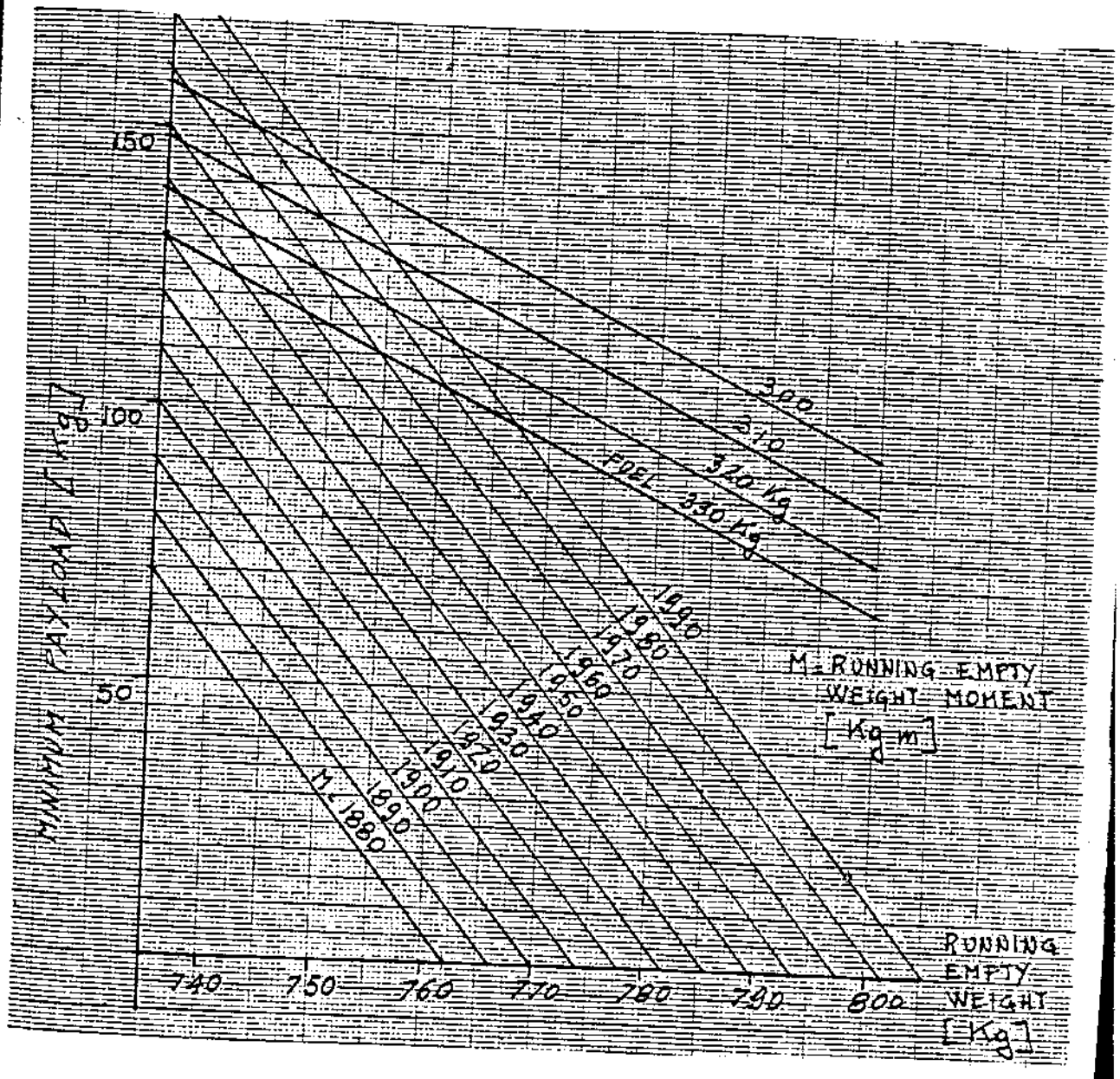

150
100
50
FUEL [Kg] x 10
300
270
240 Kg
FUEL 330 Kg
1990
1980
1970
1960
1950
1940
1930
1920
1910
1900
1890
M=1880
M = RUNNING EMPTY WEIGHT MOMENT [Kg m]
740
750
760
770
780
790
800
RUNNING EMPTY WEIGHT [Kg]

Figure 6-5

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APPENDIX A
OF SECTION 6
OF FLIGHT MANUAL

WEIGHT AND BALANCE DATA

AIRPLANE S/N .....

REGISTRATION .....

RAI APPROVAL .....

APPROVAL DATE .....

A6.1. WEIGHT AND BALANCE DATA RECORD

The Running Empty, Center of Gravity Location and Useful Load listed in Figure A6-2 are for the airplane as delivered from the factory and after actual weighing.
These figures apply only to the specific airplane serial number and registration shown.
The figure A6-3 provides the Weight and Balance Record form to present the current status of the airplane basic empty weight and a complete history of previous modification.
Any change to the installed equipment or modification which affects weight or moment must be entered the Weight and Balance Record.

CAPRONI VIZZOLA
C 22 J

WEIGHT AND BALANCE RECORD

(Continuous History of Changes in Structure or Equipment Affecting Weight and Balance)

AIRPLANE MODEL			SERIAL NUMBER							PAGE NUMBER			
DATE	ITEM NO.		DESCRIPTION OF ARTICLE OR MODIFICATION	WEIGHT CHANGE						RUNNING BASIC EMPTY WEIGHT			
				ADDED (+)			REMOVED (-)						
	In	Out		Wt. (kg)	Arm (m)	Moment kg.m	Wt. (kg)	Arm (m)	Moment kg.m	Wt. (kg)	Moment kg.m		
			AS DELIVERED										

R.A.I.Approval N. 240.495/T
Issue 8.01.1988

Figure A6-3
Date 8.04.88

MODEL C22J

Serial Number _____ Registration Number _____ Date _____

AIRPLANE RUNNING BASIC EMPTY WEIGHT

ITEM	WEIGHT (kg)	C.G. ARM (m)	MOMENT (kg.m)
BASIC EMPTY WEIGHT (*)			
ADDED OPTIONAL EQUIPMENT (If not on board when factory weighed)			
RUNNINC BASIC EMPTY WEIGHT			

* The Basic Empty Weight includes full 1.6 liters oil capacity, full brake fluid and 11.5 liters of unusable fuel, and equipment listed in the equipment list as R, S, O.

AIRPLANE PAYLOAD - ACROBATIC CATEGORY OPERATION

Maximum payload: _____ kg

Minimum payload: _____ kg

These values are computed using Figure 6.4. and 6.5.

THIS RUNNING BASIC EMPTY WEIGHT C.G. AND USEFUL LOAD ARE FOR THE AIRCRAFT AS DELIVERED FROM THE FACTORY AND AFTER ACTUAL WEIGHING.

REFER TO WEIGHT AND BALANCE RECORD (Figure A6-3) WHEN ALTERATIONS HAVE BEEN MADE.

Figure A6-2

A6.3. EQUIPMENT LIST

The following is a list of equipment installed in the airplane.
It consists of those items used for defining the configuration of an airplane whet the running empty weight is established at the time of delivery.
Item marked with an "X" are installed on the airplane.

NOTE

An alphabetical code is used to define the configuration class as followings:

R = REQUIRED for type-certification

S = STANDARD not required but supplied as standard

O = OPTIONAL, to substitute an item "R" or "S"

A = ADDED optional, neither required nor supplied as standard.

For A, O and substituted R or S items weight and arm provided in the following equipment list.

EQUIPMENT LIST

A: GENERALS

ITEM N°	CLASS OF CONFIG.	MARK IF INSTALL.	DESCRIPTION	MANUFACTURER AND P/N	P/N CAPRONI	QTY	WEIGHT KG	ARM M
1	R		ENGINE	MICROTURBO TRS 18-1-202-01		2		
2	R		ENGINE CONTROL UNIT	MICROTURBO 202-32		2		
3	R		ENGINE CONTROL UNIT (SECONDARY)	MICROTURBO 202-45		2		
4	R		ENGINE PUMP	MICROTURBO 202-03		2		
5	R		EXCITER IGNITION UNIT	BENDIX 10-381550-1		2		
6	R		FUEL PUMP BOOSTER	S.MONA SM 4011		2		
7	R		FUEL SHUT-OFF VALVE	DUKES 1683-00-3		2		
8	R		PRESSURE REGULATOR	S.MONA SM 3004-1		1.		
9	R		MAIN WHEEL ASSY	CLEVELAND 40-151		2		

EQUIPMENT LIST

A: GENERALS

ITEM N°	CLASS OF CONFIG.	MARK IF INSTALL.	DESCRIPTION	MANUFACTURER AND P/N	P/N CAPRONI	QTY	WEIGHT KG	ARM M
10	R		MAIN TYRE	GOOD-YEAR 505 C 661		2		
11	R		NOSE WHEEL ASSY	TOST 034000		1		
12	R		NOSE TYRE	DUNLOP 042-4PR		1		
13	R		BRAKE ASSY	CLEVELAND 30-164		2		
14	R		BRAKE PUMPS	CAPRONI	22-7003	4		
15	R		PARKING BRAKE ASSY	TELEFLEX L46-40		1		
16	R		PARKING BRAKE VALVE	CAPRONI	22-7002	2		
17	R		NOSE L.G. SHOCK-ABSORBER	CAPRONI	22-4110	1		

EQUIPMENT LIST

A: GENERALS

ITEM N°	CLASS OF CONFIG.	MARK IF INSTALL	DESCRIPTION	MANUFACTURER AND P/N	P/N CAPRONI	QTY	WEIGHT KG	ARM M
18	R		FLAPS ACTUATING SYSTEM					
			MOTOR	AVIAC 6060-2		1		
			SCREWJACK	AVIAC 5245-1		6		
			FLEXIBLE SHAFT	AVIAC 623-XXX		6		
19	R		ATTUATORE CARRELLO	OCEM AVIONICA 1700/1		1		
20	R		ATTUATORE TRIM	OCEM AVIONICA 1600/1		1		

EQUIPMENT LIST

B: INSTRUMENTS

ITEM N°	CLASS OF CONFIG.	MARK IF INSTALL.	DESCRIPTION	MANUFACTURER AND P/N	P/N CAPRONI	QTY	WEIGHT KG	ARM M
1	R		ALTIMETER	AERITALIA 8.040.065.2		1	0.740	0.900
2	R		MACH-AIRPSEED IND.	JAEGER 64010-481-1		1	0.700	0.900
3	S		ATTITUDE INDICATOR	AIM 500 DCFL		1	1.134	0.900
4	S		TURN AND BANK IND.	UNITED INSTRUM. 9550B		1	0.590	0.900
5	S		G. METER	AERITALIA 8.192.010		1	0.330	0.900
6	S		RATE OF CLIMB IND.	AERITALIA 8.191.020		1	0.430	0.900
7	S		CLOCK	REVUE THOMMEN B13-941.22.28.1		1	0.165	0.900
8	R		FUEL QTY TRANSM.	FAREM 04 TE 04		4		
9	R		FUEL QTY TRANSM.	FAREM 04 TE 10 Typ 823		2		

EQUIPMENT LIST

B: INSTRUMENTS

ITEM N°	CLASS OF CONFIG.	MARK IF INSTALL.	DESCRIPTION	MANUFACTURER AND P/N	P/N CAPRONI	QTY	WEIGHT KG	ARM M
10	R		O.A.T. PROBE	MS 28038-1		1		
11	R		FLAP POSITION IND.	FAREM 05DB03M Typ 991		1	0.080	0.900
12	R		TRIM POSITION IND.	FAREM 05DB03N Typ 992		1	0.080	0.900
13	R		MAGNETIC COMPASS	AIRPATH MS 17983-2		1	0.255	0.900
14	R		ENGINE INSTRUM.	OCEM 1821		1	2.2	0.900
15	R		ENGINE INSTRUM. POWER SUPPLY	OCEM 1845/1846		2	0.7	0.750
16	S		ALTITUDE ALERTER	AERO MECHANISM AM 275		1	0.38	0.9
17	S		ALTITUDE ENCODER	AERO MECHANISM AM 250		1	0.27	0.7

EQUIPMENT LIST

C: FURNISHING

ITEM N°	CLASS OF CONFIG.	MARK IF INSTALL	DESCRIPTION	MANUFACTURER AND P/N	P/N CAPRONI	QTY	WEIGHT KG	ARM M
1	R		PILOT SEAT	CAPRONI	22-1424 22-1425	1+1		
2	R		INERTIA REEL	PACIFIC SCIENTIFIC CO. 0106176-0		2		
3	R		SEAT BELTS:					
			DORSAL	AUTOFLUG SHUGU FAG 7E-19		2		
			NEGATIVE G	AUTOFLUG BOGU FAG 7B-1		2		
			VENTRAL	AUTOFLUG BAGU FAG 7B-1		2		

EQUIPMENT LIST

D: AVIONICS (STANDARD VFR)

ITEM N°	CLASS OF CONFIG.	MARK IF INSTALL.	DESCRIPTION	MANUFACTURER AND P/N	P/N CAPRONI	QTY	WEIGHT KG	ARM M
1	A		COMM 1	COLLINS 622-2078-001		1	1.540	0.900
2	A		AUDIO MARKER PANEL	COLLINS 622-2087-011		1	0.725	0.900
3	A		POWER UNIT	COLLINS 622-2093-001		1	0.680	2.650
4	S		VHF ANTENNA	CHELTON 16-21B				

EQUIPMENT LIST

D: AVIONICS

ITEM N°	CLASS OF CONFIG.	MARK IF INSTALL.	DESCRIPTION	MANUFACTURER AND P/N	P/N CAPRONI	QTY	WEIGHT KG	ARM M
1	A		COMM	COLLINS 622-2078-001		1	1.540	0.900
2	A		NAV	COLLINS 622-2080-011		2	1.314	0.900
3	A		ADF RECEIVER	COLLINS 622-3587-001		1	1.360	0.900
4	A		ADF INDICATOR	COLLINS 622-4480-001		1	0.300	0.900
5	A		TRANSPONDER	COLLINS 622-3004-001		1	0.460	0.900
6	A		DME TRANSCEIVER	COLLINS 622-3670-001		1	2.590	2.650
7	A		DME INDICATOR	COLLINS 622-3671-001		1	0.270	0.900
8	A		ANTENNA ADF	COLLINS 622-3856-001		1	1.165	2.650
9	A		ANTENNA DME	COLLINS 622-4011-001		1		
10	A		ANTENNA MARKER	DORNE MARGOLIN DMN 27-3		1		
11	A		ANTENNA VOR/LOC/GLS	DORNE MARGOLIN DMN 4-17/1A		1+1		

EQUIPMENT LIST

E: ELECTRICAL SYSTEM

ITEM N°	CLASS OF CONFIG.	MARK IF INSTALL.	DESCRIPTION	MANUFACTURER AND P/N	P/N CAPRONI	QTY	WEIGHT KG	ARM M
1	R		BATTERY	GATES 9750-0740		1		
2	R		GENERATOR CONTROL UNIT	AUXILEC D27		2		
3	R		CONTACTOR	ECE 231 GC 01		2		
4	R		STROBE LIGHTS	KIT GRIMES 30-0555-3.28				
			TAIL LIGHT			1		
			WING TIP L.			2		
			POWER SUPPLY			1		
5	R		WARNING HORN	ELECTRO-MECH EM 2062-3		1		

EQUIPMENT LIST

F: OXYGEN SYSTEM

ITEM N°	CLASS OF CONFIG.	MARK IF INSTALL	DESCRIPTION	MANUFACTURER AND P/N	P/N CAPRONI	QTY	WEIGHT KG	ARM M
1	S		BOTTLE	EROS 444-00600-000		1		
2	S		RIGHT REGULATOR	EROS 444-00530-200		1		
3	S		LEFT REGULATOR	EROS 444-00531-200		1		
4	S		VALVE	EROS 444-00533-200		1		
5	S		PRESSURE GAUGE	EROS 444-00529-100		1		
6	S		FILLING VALVE	EROS DKR 131		1		
7	S		OXYGEN HOSES	MS 22055A-10		2		