

# OPERATIONS MANUAL PART B



**ALSIM**

**ALX – MEP (similar to PA-44)**

**FR 3136**

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## 1. GENERAL INFORMATION

### 1.1. UNITS OF MEASUREMENT

#### A/ Distances

EQUIVALENCE	UNITS	CONVERSION METHOD
1 ft = 0,3048 m	As m	X 3 et /10
1 m = 3,2802 ft	m in ft	X 3 + 1/10 the result
1 nm = 1,852 km	nm in km	X 2 – 1/10 the result
1 km = 0,5399 nm	km in nm	/ 2 + 1/10
1 nm = 6076 ft	nm in ft	X 6000
1 yard = 0,9144 m	yard in m	(yard) – 1/10
1 m = 1,0936 yard	m in yard	(asily) + 1/10
1 inch = 0,0254 m	inch in m	X 2+1/10(inch) et /100
1 m = 9,37 inch	m in inch	X 40 – 2% the result
1 cm = 0,3937 inch	cm in inch	X 4 and /10
1 inch = 2,54 cm	inch in cm	X 2 and ½(inch)

#### B/ Speed

EQUIVALENCE	UNITS	CONVERSION METHOD
1 km/h = 0,54kt	km/h in kt	/ 2 + 1/10 the result
1 kt = 1,852 km/h	as km/h	X 2 – 1/10 the result
1 m/s = 196,8 ft/mn	m/s in ft/mn	X 200
1 ft/mn = 5,08 10 <sup>-3</sup> m/s	ft/mn in m/s	/ 200
1 kt = 0,515 m/s	As m/s	/ 2
1 m/s = 1,94 kt	m/s in kt	X 2
1 mph = 1,609 km/h	mph in km/h	X 2 – 2/10 the result

#### C/ Masses

EQUIVALENCE	UNITS	CONVERSION METHOD
1 lbs = 0,4535 kg	lbs in kg	/ 2 – 10% the result
1 kg = 2,2046 lbs	kg in lbs	X 2 + 2% the result

D/ Pressures

EQUIVALENCE	UNITS	CONVERSION METHOD
1 in hg = 33,86 hPa	Mercury inch in hPa	X 30 + 1/10
1 hPa = 0,0295 in hg	hPa in mercury inch	X 30 and 1/100
1 mb = 1 hPa	As hPa	X 1
1 Pa = 0,01 mb	Pa in mb	/ 100
1 bar = 14,5 psi	bar in psi	X 10 and ½ the result
1 psi = 0,0689 bar	psi in bar	X 7 and /100
1 psi = 70,28 g/cm <sup>2</sup>	Psi in g/ cm <sup>2</sup>	X 70

E/ Capacities

EQUIVALENCE	UNITS	CONVERSION METHOD
1 usg = 3,785 liter	as liter	X 4 – 20% (usg)
1 imp g = 4,456 liter	imp g in liter	X 4 + ½ (imp g)
1 litre = 0,2205 imp g	litre in imp g	(X 2 + 20% (l)) / 10

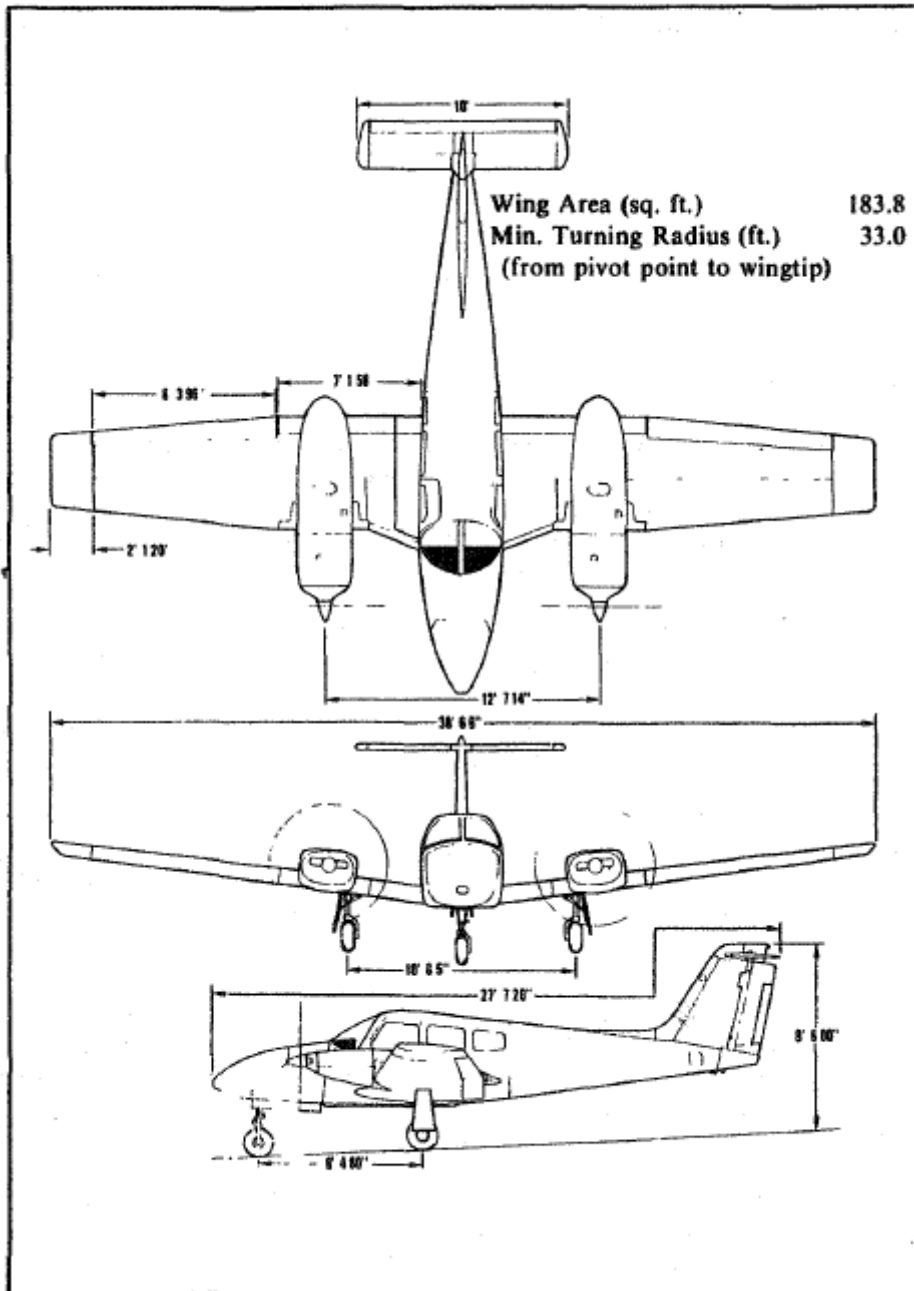
F/ Fuel

EQUIVALENCE	UNITS	CONVERSION METHOD
1 lbs = 0,630 liter	lbs in liter	X 6 /101 + 3% (liters)
1 litre = 1,587 lbs	litres in lbs	(liter) + 60% (liters)
1 litre = 0,84 kg	litres in kg	X 7 and /10
1 kg = 1,388 liters	kg in liter	(kg) + 4/10 kg

G/ Temperatures

EQUIVALENCE	UNITS	CONVERSION METHOD
°C = degrees Celsius	°C in °F	(°C X 9/5) + 32
°F = degrees Fahrenheit	°F in °C	(°F – 32) X 5/9
K = Kelvin	°C in K	(°C) + 273

**1.2. DIMENSIONS OF THE PLANE:**



### 1.3. ENGINE

Number of Engines	2
Engine Manufacturer	Lycoming
Engine Model Number	0-360-E I A6D
Rated Horsepower	180
Rated Speed (rpm)	2700
Bore (in.)	5.125
Stroke (in.)	4.375
Displacement (cu. in.)	361
Compression Ratio	9.00:1
Engine Type	Four Cylinder, Direct Drive, Horizontally Opposed, Air Cooled

### 1.4. PROPELLER

Number of Propellers	2
Propeller Manufacturer	Hartzell
Model	HC-C2Y(K,R)-2CEUF
Number of Blades	2
Propeller Diameter (in.)	72
Propeller Type	Constant Speed,Hydraulically Actuated, Full Feathering

### 1.5. FUEL

Approved fuel	AVGAS 100LL (ASTM D910)
Overall usable fuel	108 USG
Overall total fuel	110 USG



## 1.6. OIL

Oil capacity

6 qts (*per tank*)

## 2. LIMITATION

### 2.1. SPEED LIMITATIONS

The following table addresses the airspeed limitations and their operational significance:

SPEED		KIAS	REMARKS	
<b>V<sub>NE</sub></b>	Never exceed speed	<b>202</b>	Do not exceed this speed in any operation.	
<b>V<sub>NO</sub></b>	Maximum Structural Cruising Speed	<b>169</b>	Do not exceed this speed except in smooth air, and only with caution.	
<b>V<sub>A</sub></b>	Design Manoeuvring speed	<b>135</b>	Do not make full or abrupt control movement above this speed, because under certain conditions the aircraft may be overstressed by full control movement.	
<b>V<sub>LE</sub></b>	Maximum Landing Gear extended speed	<b>140</b>	Do not exceed this speed with the landing gear extended.	
<b>V<sub>LO</sub></b>	Maximum Landing Gear operating speed	<b>RETRACTING</b>	<b>109</b>	Do not exceed this speed when operating the landing gear.
		<b>EXTENDING</b>		
<b>V<sub>FE</sub></b>	Maximum flaps extended speed	<b>APP</b>	<b>140</b>	Do not exceed this speed for indicated flaps setting.
		<b>LDG</b>		
<b>V<sub>MCA</sub></b>	Aircraft minimum control speed with one engine inoperative	<b>56</b>	Do not reduce speed below this value in event of one engine inoperative condition.	

## 2.2. AIRSPEED INDICATOR MARKINGS

Airspeed indicator markings and their colour code are explained in the following table.

MARKING	KIAS	EXPLANATION
White arc	<b>55-111</b>	Lower limit is $V_{SO}$ , upper limit is the maximum allowable speed with flaps extended in <i>FULL</i> position.
Red line	<b>56</b>	Minimum aircraft control speed with one engine inoperative and flaps set to T.O.
Green arc	<b>57 – 169</b>	Normal aircraft operating range (lower limit is $V_{S1}$ , stall speed in “clean” configuration, and upper limit is the maximum structural cruise speed $V_{NO}$ ).
Blue line	<b>88</b>	Best rate-of-climb speed with one engine inoperative at sea level.
Yellow arc	<b>169 – 202</b>	Speed range where manoeuvres must be conducted with caution and only in smooth air.
Red line	<b>202</b>	Maximum speed for all operations.

### 2.3. POWERPLANT LIMITATIONS

Number of engines 2

#### Engine Operating Limits

Maximum horsepower	180
Maximum rotation speed (RPM)	2700
Maximum manifold pressure	Full Throttle
Maximum cylinder head temperature	500°F
Maximum oil temperature	245°F

#### Oil Pressure

Minimum	15 psi
Maximum	115 psi

#### Fuel pressure

Minimum	0.5 psi
Normal	0.5 to 8 psi
Maximum	8 psi

## 2.4. WEIGHTS

CONDITION	WEIGHT	
Maximum takeoff weight	1723 kg	3800 lbs
Maximum landing weight	1723 kg	3800 lbs
Maximum weight in baggage's compartment	91 kg	200 lbs

## 2.5. CENTER OF GRAVITY RANGE

Weight Pounds	Forward Limit Inches Aft of Datum	Rearward Limit Inches Aft of Datum
2800	84.0	93.0
3400	85.0	93.0
3800	89.0	93.0

## 2.6. APPROVED MANOEUVRES

All intentional acrobatic maneuvers (including spins) are prohibited.  
Avoid abrupt maneuvers.

## 2.7. LOAD FACTORS LIMIT

Load factors limit without flaps are as followed

<b>Positive</b>	<b>+3,8 g</b>
<b>Negative</b>	<b>0 g</b>

Load factors limit with flaps extended are as followed

<b>Positive</b>	<b>+2 g</b>
<b>Negative</b>	<b>0 g</b>

## 2.8. FLIGHT CREW

Minimum crew:	1 pilot
Maximum number of occupants:	4 people (including the pilot)

## 2.9. FLIGHT CONDITION

The aircraft is equipped for following flight operations:

- VFR Day and Night
- IFR Day and Night including IMC

Demonstrated crosswind limit is 20 knots.

### 3. NORMAL PROCEDURES

This section contains all the normal procedures to be followed during a flight from the walk around to the parking at the end of the leg.

#### 3.1. AIRSPEEDS AND PRESETTINGS

FLIGHT PHASE			CONFIGURATION		ENGINE		
	PITCH	IAS	GEAR	FLAPS	MP	RPM	MIXTURE
ROTATION	+10	75	DOWN	0	29	2700	FR
CLIMB	+9	105	UP	0	25	2500	FR
BEST RATE CLIMB	+12	88	UP	0	FULL	MAX	FR
BEST ANGLE CLIMB	+14	82	UP	0	FULL	MAX	FR
CRUISE	0	145	UP	0	24	2400	Adjust
DESCENT (VNO)	-2	169	UP	0	21	2300	Adjust
HOLDING	+1	100	UP	0	14	2300	FR
APPROACH	+2	90	DOWN	10	20	2300	FR
FINAL APPROACH APP	-2	85	DOWN	10	15	2700	FR
FINALE APPROACH LDG	-3	75	DOWN	40	18	2700	FR

### 3.2. DEFINITIONS

#### Guide:

This is the document that brings together actions to be performed by the pilot flying, from the handling of the aircraft until the end of the flight.

The purpose of the guide is to prepare the plane for the flight phase that follows. It is based on a standardized path (scanning), logical and as simple as possible of the various panels or equipment in the cockpit.

The actions of the guide are made at the most convenient moment chosen by the pilot in command, in general when the handling of the plane allows to do so.

The guide is primarily a flexible tool that should not lead to rigidity, the checklist coming next ensuring that critical actions were performed.

The recommended solution to memorize and perform all the actions is to proceed via the scanning process. Nevertheless, even if known by the pilot, the check-list will be performed by reading it, all the times.

#### Check-list :

This is the document on board the plane containing the list of checks to be performed during the flight according to each phase.

A checklist usually comes at the end of the accomplishment of a guide to ensure that the actions relevant to the safety of the flight were successfully completed.

The pilot always triggers the carrying-out of a guide by the following call-out :

**Relevant guide followed by "ACTIONS ....."**.

For guides that are not followed by a checklist, the pilot announces:

**"ACTIONS COMPLETED"**

The pilot always triggers the carrying-out of a checklist with the call-out:

**Relevant checklist followed by "CHECK LIST ..."**.



### 3.3. CALL-OUTS

#### Chronological flight call-outs

CALL-OUT	TRIGGERED WHEN
“COCKPIT PREPARATION ACTIONS”	The pilot takes place on the pilot flying seat and begin preparing the cockpit for departure
“COCKPIT PREPARATION ACTIONS COMPLETED”	Completion of the cockpit preparation actions
“READY FOR DEPARTURE BRIEFING ?”	The pilot is ready to brief for the departure (only if necessary)
“DEPARTURE BRIEFING COMPLETED”	The departure briefing is done
“BEFORE START ACTIONS”	The start-up clearance has been obtained if under IFR. This follows cockpit preparation actions otherwise.
“BEFORE START CHECK-LIST”	Completion of the before start actions
“BEFORE START CHECK-LIST COMPLETED”	Completion of the before start check-list
“[RIGHT/LEFT] ENGINE START UP, SAFETY CHECK”	The pilot proceeds to start the engine n°X, and check that outside safety is assured
“[RIGHT/LEFT] ENGINE START UP COMPLETED”	The engine n°X start up sequence is completed
“AFTER START UP ACTIONS”	Both engines has been started
“AFTER START UP CHECK-LIST”	Completion of after start up actions
“AFTER START UP CHECK-LIST COMPLETED”	Completion of after start up checklist
“BLOCK TIME XX:XX”	Just before taxiing. The pilot writes down the block time and then release the parking brake
“TAXIING ACTIONS”	At an appropriate time and clear from obstacles when taxiing, when the pilot is ready to perform the taxiing actions
“BRAKES CHECK”	Testing braking actions

CALL-OUT	TRIGGERED WHEN
“ADI CHECK”	Just before engaging on the first turn to test the AHRS
“TURNING [LEFT/RIGHT], HEADING [DECREASING/INCREASING], PITCH STABLE”	During turns when testing the AHRS
“TAXIING ACTIONS COMPLETED”	Completion of taxiing actions
“ENGINE RUN UP”	Start of the engine run up sequence
“ENGINE RUN UP COMPLETED”	End of the engine run up sequence
“BEFORE LINE UP ACTIONS”	This follows engine run up
“READY FOR TAKE OFF BRIEFING?”	Completion of before line up actions
“TAKE OFF BRIEFING COMPLETED”	The end of take-off briefing
“BEFORE LINE UP CHECKLIST”	This follows take-off briefing
“BEFORE LINE UP CHECKLIST COMPLETED”	Completion of before line up check-list
“LINE UP ACTIONS”	The line up clearance
“LINE UP ACTIONS COMPLETED”	Completion of line up actions
“SAFETY CHECK”	Just before entering the runway the pilot check the final axis <b>on both sides</b>
“HEADINGS CHECK”	Alignment complete
“TAKE OF AT XX:XX, V1 & VR XX KTS”	Just before applying take-off power, the pilot announces take-off time and remind V1 and VR (V1 = VR)
“TAKE-OFF POWER CHECK, SPEED ALIVE, PARAMETERS GREEN, NO ALARMS”	<p>During take-off run the pilots check:</p> <ul style="list-style-type: none"> <li>• That take-off power is at the value expected <ul style="list-style-type: none"> <li>• That the speedometer is responsive</li> </ul> </li> <li>• That engine parameters (especially oil pressure &amp; temp) are in the green range</li> </ul>

CALL-OUT	TRIGGERED WHEN
	<ul style="list-style-type: none"> <li>That no alarms are shown on the annunciator panel</li> </ul>
"POSITIVE CLIMB, BRAKES, GEAR UP"	After lift of when vertical speed indicator is positive, the pilots brakes the wheel and retract the landing gear
"GEAR UP AND LOCKED"	Amber transition light extinction
"AFTER TAKE OFF ACTIONS"	Passing through the safety altitude
"SPEED ABOVE xx KTS, FLAPS UP"	If flaps need to be retracted
"FLAPS UP"	Flaps are in up position
"AFTER TAKE OFF CHECKLIST"	Completion of after take-off actions
"AFTER TAKE OFF CHECKLIST COMPLETED"	Completion of after take-off checklist
"CLIMB ACTIONS"	Changing altimeters settings
"ALTIMETERS CHECK FL XX, TOP, [NO DIFFERENCE/XXX FT DIFFERENCE]"	Altimeters comparison
"CLIMB ACTIONS COMPLETED"	Completion of climb actions
"CRUISE ACTIONS"	The capture of the cruising altitude
"CRUISE CHECKLIST"	Completion of cruise actions
"CRUISE CHECKLIST COMPLETED"	Completion of cruise check-list
"READY FOR ARRIVAL BRIEFING?"	Knowledge of weather at destination
"ARRIVAL BRIEFING COMPLETED"	Completion of arrival briefing
"BEFORE DESCENT ACTIONS"	Start of before descent actions

CALL-OUT	TRIGGERED WHEN
“BEFORE DESCENT CHECK-LIST”	Completion of before descent actions
“BEFORE DESCENT CHECK-LIST COMPLETED”	Completion of before descent checklist
“APPROACH ACTIONS”	Altimeter change
“ALTIMETERS CHECK XXXX FT, TOP, [NO DIFFERENCE/XXX FT DIFFERENCE]”	Altimeters comparison
“APPROACH CHECKLIST”	Completion of approach actions
“APPROACH CHECKLIST COMPLETED”	Completion of approach checklist
“BEFORE LANDING ACTIONS”	Preparing the aircraft for landing
“SPEED BELOW xx KTS, FLAPS APPROACH”	Extending the flaps to approach
“FLAPS APPROACH”	Flaps are in approach position
“SPEED BELOW xx KTS, GEAR DOWN”	Extending landing gear
“GEAR DOWN, THREE GREENS”	The three green lights are on
“SPEED BELOW xx KTS, FLAPS LANDING”	Extending flaps to landing position
“FLAPS LANDING”	Flaps are in landing position
“BEFORE LANDING CHECK-LIST”	Completion of before landing actions
“BEFORE LANDING CHECK-LIST COMPLETED”	Completion of before landing check-list
“GEAR, FLAPS, HIGH RPM, AP DISC”	100 ft AGL
“AFTER LANDING ACTIONS”	The vacation of the runway

CALL-OUT	TRIGGERED WHEN
“AFTER LANDING CHECKLIST”	Completion of after landing actions
“AFTER LANDING CHECKLIST COMPLETED”	Completion of after landing check-list
“BLOCK TIME XX:XX”	The immobilization of the aircraft on the tarmac
“PARKING ACTIONS”	Engine are shutdown
“PARKING CHECK-LIST”	Completion of parking actions
“PARKING CHECK-LIST COMPLETED”	Completion of parking check-list

### Other call-outs

CALL-OUT	TRIGGERED WHEN
“SAFETY CHECK”	Before initiating any turn
“GOING AROUND, FLAPS TAKE-OFF”	Initiating going around (no speed check)
“1000 FEET TO GO”	1000 ft before reaching an altitude
“200 FEET”	200 ft before reaching an altitude
“X HUNDRED FEET, STABILIZED”	Upon reaching stabilization height
“X HUNDRED FEET MINIMA”	This call-out should be performed 300 ft, 200 ft and 100 ft above minimas during IFR flights
“MINIMA”	At the minima, followed either by the go around call-out, or “CONTINUE”
“RUNWAY VISUAL”	When seeing part of the lightning system or part of the runway during an IFR approach
“[AP/FD] [RELEVANT MODE] MODE”	Pressing AP/FD button to engage automation system
“[RELEVANT MODE] [GREEN/BLUE/WHITE]”	Checking the mode is actually engaged on the FMA

### 3.4. COCKPIT PREPARATION ACTIONS

TRIMS .....	CHECK, SET TO NEUTRAL
MIXTURE .....	CUT OFF
PROPELLER .....	MAX RPM
POWER LEVER .....	IDLE
AVIONIC MASTER .....	OFF
XPDR .....	OFF
PARKING BRAKE .....	SET
EMERGENCY LANDING GEAR HANDLE .....	SECURED
GEAR LEVER.....	DOWN
ALL ELECTRICAL SWITCHES.....	OFF
COWL FLAPS.....	OPEN
MAGNETOS .....	OFF
FUEL PUMP .....	OFF
ALTERNATOR.....	OFF
BATTERY .....	OFF
FLAPS .....	UP
LEFT ENGINE FUEL SELECTOR .....	LEFT TANK
RIGHT ENGINE FUEL SELECTOR.....	RIGHT TANK
BREAKERS .....	ALL IN

### 3.5. BEFORE START ACTIONS

DEPARTURE BRIEFING.....	PERFORMED
BATTERY .....	ON
ANNUNCIATOR PANEL.....	CHECK
FUEL QUANTITY .....	CHECK
MIXTURE .....	FULL RICH
FUEL PUMP .....	ON
↳ <i>Check that Fuel Flow <math>\approx</math> 5USG/h</i>	
STROBE.....	ON
MAGNETOS .....	4 ON

### 3.6. BEFORE START CHECKLIST

DEPARTURE BRIEFING .....	PERFORMED
BATTERY .....	ON
STROBE .....	ON
FUEL PUMP .....	ON
MIXTURE .....	FULL RICH
PARKING BRAKE .....	SET
MAGNETOS .....	4 ON

### 3.7. ENGINE 2 START UP

OUTSIDE SAFETY .....	CHECK
STARTER ENGINE 2 .....	ENGAGE
↳ <i>Do not engage starter for more than 10 seconds</i>	
RPM ENGINE 2 .....	1000 RPM
↳ <i>When power is low, RPM are controlled through manifold pressure lever</i>	
OIL PRESSURE ENGINE 2.....	CHECK, >50 PSI
ALTERNATOR 2.....	ON, CHECK CHARGE
GYRO SUCTION .....	CHECK
↳ <i>Check extinction of « R » led on gyro suction display</i>	

### 3.8. ENGINE 1 START UP

OUTSIDE SAFETY .....	CHECK
STARTER ENGINE 1 .....	ENGAGE
↳ <i>Do not engage starter for more than 10 seconds</i>	
RPM ENGINE 1 .....	1000 RPM
OIL PRESSURE ENGINE 1.....	CHECK, >50 PSI
ALTERNATOR 2.....	ON, CHECK CHARGE
GYRO SUCTION .....	CHECK
↳ <i>Check extinction of « L » led on gyro suction display</i>	

### 3.9. AFTER START UP ACTIONS

AVIONIC MASTER .....	ON
XPDR.....	STBY
RADIO/RADIONAV.....	ON, SET
ATIS/DEPARTURE PARAMETERS .....	OBTAINED
NAV LIGHTS .....	ON
FUEL PUMP .....	OFF

ALTIMETERS ..... SET  
ELECTRICAL TRIM ..... CHECK RANGE AND DISC.  
AUTO PILOT ..... CHECK  
FLIGHT CONTROLS ..... FREE  
FLAPS ..... CHECK

### 3.10. AFTER START UP CHECK-LIST

OIL PRESSURE ..... CHECK  
GYRO SUCTION ..... CHECK  
AVIONIC MASTER ..... ON  
RADIO/RADIONAV ..... ON, SET  
ALTIMETERS ..... SET  
FLIGHT CONTROLS ..... FREE  
FLAPS ..... CHECK

### 3.11. TAXIING ACTIONS

BLOCK TIME ..... REPORTED  
TAXI LIGHT ..... ON  
BRAKES ..... CHECK  
    ↳ *Test right seat braking action if necessary*  
AHRS ..... CHECKED DURING TURNS

### 3.12. ENGINE RUN-UP

PARKING BRAKE ..... SET  
TAXI LIGHT ..... OFF  
OIL TEMPERATURE ..... CHECK  
RPM ..... 1900 RPM  
    ↳ *Perform engine run-up on both engines at the same time*  
PROPELLER ..... FEATHER CHECK  
    ↳ *Go swiftly from max RPM to feather position then go back to max RPM,  
    one handle at a time*  
MAGNETOS ..... CHECK  
    ↳ *First the two left magnetos (i.e right engine left magneto and left engine  
    left magneto), then the right ones. Check loss of RPM < 175 RPM and  
    maximum in between < 50 RPM*  
ALTERNATOR CHARGE ..... CHECK  
GYRO SUCTION ..... BETWEEN 4.8 AND 5.2 HG



POWER LEVERS ..... IDLE  
     ↳ *Check idle position > 750 RPM*  
 RPM..... 1000 RPM

### 3.13. BEFORE LINE UP ACTIONS

FUEL PUMPS ..... ON  
 LANDING LIGHT ..... ON  
 PITOT HEAT ..... AS NECESSARY  
 DE-ICING SYSTEM ..... AS NECESSARY  
 WEATHER RADAR ..... WEATHER  
 TRIMS ..... SET NEUTRAL  
 FLAPS ..... UP  
 FD ..... AS NECESSARY  
 TAKE OFF BRIEFING ..... PERFORMED

### 3.14. BEFORE LINE UP CHECKLIST

TAKE OFF BRIEFING ..... PERFORMED  
 FLAPS ..... UP  
 FUEL PUMPS ..... ON  
 MIXTURE ..... FULL RICH  
 PROPELLERS ..... MAX RPM  
 PITOT HEAT ..... AS NECESSARY  
 DE-ICING SYSTEM ..... AS NECESSARY  
 FD ..... AS NECESSARY  
 WEATHER RADAR ..... WEATHER  
 TRIMS ..... NEUTRAL  
 COWL FLAPS ..... OPEN

### 3.15. LINE-UP ACTIONS

XPDR ..... ALT  
 QFU ..... CHECK

### 3.16. TAKE-OFF

BRAKES ..... APPLIED  
 TAKE OFF TIME ..... ANNOUNCED  
 MANIFOLD PRESSURE ..... 15 HG  
 BRAKES ..... RELEASED

POWER ..... FULL  
     ↳ *Check 29 Hg, 2700 RPM*  
 ENGINE PARAMETERS ..... CHECK  
 SPEED ..... CHECK  
 ANNUNCIATOR PANEL ..... CHECK  
 ROTATION SPEED ..... 75 kt  
     ↳ *Wait for positive climb*  
 LANDING GEAR ..... UP

### 3.17. AFTER TAKE-OFF ACTIONS

FLAPS ..... UP  
 FUEL PUMPS ..... OFF  
 LANDING LIGHTS ..... OFF  
 CLIMB POWER ..... SET  
     ↳ *Manifold pressure : 25 Hg, RPM : 2500 RPM*

### 3.18. AFTER TAKE-OFF CHECKLIST

LANDING GEAR.....	UP, LOCKED
FLAPS .....	UP
CLIMB POWER .....	SET
LANDING LIGHTS.....	OFF
FUEL PUMPS.....	OFF

### 3.19. CLIMB ACTIONS

ALTIMETERS ..... SET, COMPARED  
 AUTO PILOT ..... AS NECESSARY

### 3.20. CRUISE ACTIONS

CRUISE POWER..... SET  
     ↳ *Manifold pressure : 24 Hg, RPM : 2400 RPM, Mixture : according to EGT*  
 ENGINE PARAMETERS..... CHECK  
 COWL FLAPS..... CLOSED

### 3.21. CRUISE CHECKLIST

CRUISE POWER.....	SET
ENGINE PARAMETERS .....	CHECK
COWL FLAPS.....	CLOSED

### 3.22. BEFORE DESCENT ACTIONS

LANDING PARAMETERS .....	OBTAINED
MIXTURE.....	FULL RICH
RADIO/RADIONAV.....	SET
ARRIVAL BRIEFING.....	PERFORMED

### 3.23. BEFORE DESCENT CHECKLIST

MIXTURE .....	FULL RICH
RADIO/RADIONAV.....	SET
ARRIVAL BRIEFING.....	PERFORMED

### 3.24. APPROACH ACTIONS

ALTIMETERS .....	SET, COMPARED
------------------	---------------

### 3.25. APPROACH CHECKLIST

ALTIMETERS .....	SET, COMPARED
------------------	---------------

### 3.26. BEFORE LANDING ACTIONS

COWL FLAPS.....	OPEN
LANDING LIGHTS .....	ON
FUEL PUMP .....	ON
FLAPS .....	TO/APPR
LANDING GEAR.....	DOWN
FLAPS .....	sLDG
PROPELLERS.....	MAX RPM
AUTO PILOT .....	OFF

### 3.27. BEFORE LANDING CHECKLIST

LANDING GEAR.....	DOWN, THREE GREENS
FLAPS .....	AS REQUIRED
PROPELLERS.....	MAX RPM
COWL FLAPS.....	OPENS
AUTO PILOT .....	OFF

### 3.28. AFTER LANDING ACTIONS

FLAPS .....	UP
LANDING LIGHTS .....	OFF
FUEL PUMP .....	OFF
XPDR.....	STBY
WEATHER RADAR .....	STBY
TAXI LIGHT .....	ON

### 3.29. AFTER LANDING CHECKLIST

FLAPS .....	UP
LANDING LIGHTS .....	OFF
FUEL PUMP .....	OFF
XPDR.....	STBY
WEATHER RADAR .....	STBY

### 3.30. ENGINE SHUTDOWN

TAXI LIGHT .....	OFF
PARKING BRAKE.....	SET
RADIO FREQUENCY .....	LEFT
AVIONIC MASTER .....	OFF
NAV LIGHTS .....	OFF
ALTERNATOR.....	OFF
POWER LEVERS .....	IDLE
MIXTURE.....	CUT OFF
→ <i>Wait for engines to stop</i>	
MAGNETOS .....	OFF

### 3.31. PARKING ACTIONS

STROBE .....	OFF
BATTERY .....	OFF

### 3.32. PARKING CHECKLIST

PARKING BRAKE .....	SET
AVIONIC MASTER .....	OFF
NAV LIGHTS .....	OFF
MIXTURES .....	CUT OFF
MAGNETOS .....	OFF
STROBE .....	OFF
ALTERNATOR .....	OFF
BATTERY .....	OFF

## 4. EMERGENCY PROCEDURES

This section contains abnormal procedures to use in case of failure of either one of the systems of the aircraft.

### 4.1. EMERGENCY AIRSPEEDS

OEI SPEED		
		KIAS
Air Minimum Control Speed	<b>VMCA</b>	56
OEI Best Rate of Climb Speed	<b>VYSE</b>	88

### 4.2. ENGINE FAILURES

ENGINE FIRE / FAILURE BEFORE V1	
POWER LEVER .....	IDLE
BRAKES.....	APPLIED
→ <i>Maintain runway axis</i>	
MIXTURES.....	CUT OFF
FUEL SELECTORS .....	OFF
MAGNETOS.....	OFF
BATTERY.....	OFF
→ <i>Evacuate aircraft as necessary</i>	

**ENGINE FIRE / FAILURE AFTER V1**

AP .....	DISC
POWER.....	FULL
LANDING GEAR .....	UP
FLAPS.....	UP
→ <i>Identify dead engine (dead foot, dead engine). It is designed X engine. X should be replaced by right or left.</i>	
X ENGINE POWER LEVER.....	IDLE
→ <i>Check nothing happens</i>	
X ENGINE PROPELLER.....	FEATHER
→ <i>Check feather</i>	
X ENGINE MIXTURE .....	CUT OFF
→ <i>Reach and climb to 88 kt (blue line)</i>	
LIVE ENGINE COWL FLAPS.....	OPEN
X ENGINE ALTERNATOR .....	OFF
X ENGINE FUEL SELECTOR.....	OFF
X ENGINE MAGNETOS.....	OFF
X ENGINE FUEL PUMP.....	OFF
X ENGINE COWL FLAPS .....	CLOSED
FUEL SELECTORS .....	CROSSFEED AS NECESSARY

**LAND AS SOON AS POSSIBLE**  
**USE « ONE ENGINE INOPERATIVE APPROACH » CHECKLIST**

**ENGINE FIRE / FAILURE IN FLIGHT**

AP .....	DISC
POWER.....	FULL
LANDING GEAR .....	UP
FLAPS.....	UP
→ <i>Identify dead engine (dead foot, dead engine). It is designed X engine. X should be replaced by right or left.</i>	
X ENGINE POWER LEVER.....	IDLE
→ <i>Check nothing happens</i>	
X ENGINE PROPELLER.....	FEATHER
→ <i>Check feather</i>	
X ENGINE MIXTURE .....	CUT OFF
→ <i>Reach and climb to 88 kt (blue line)</i>	
LIVE ENGINE COWL FLAPS.....	OPEN
LIVE ENGINE POWER .....	ADJUSTED
TRIMS .....	SET
X ENGINE ALTERNATOR .....	OFF
X ENGINE FUEL SELECTOR.....	OFF
X ENGINE MAGNETOS.....	OFF
X ENGINE FUEL PUMP.....	OFF
X ENGINE COWL FLAPS .....	CLOSED
FUEL SELECTORS .....	CROSSFEED AS NECESSARY

**LAND AS SOON AS POSSIBLE**  
**USE « ONE ENGINE INOPERATIVE APPROACH » CHECKLIST**

**ENGINE FIRE / FAILURE ON FINAL**

AP ..... DISC  
POWER..... ADJUSTED  
FLAPS..... APP  
→ *Identify dead engine (dead foot, dead engine). It is designed engine X. (X being either RIGHT or LEFT)*  
X ENGINE POWER..... IDLE  
→ *Check nothing happens*  
X ENGINE PROPELLER..... FEATHER  
→ *Check feather*  
X ENGINE MIXTURE ..... CUT OFF

**PROCEED FOR SAFE LANDING IF STABLIZED, OR PERFORM ONE ENGINE  
INOPERATIVE GOING AROUND PROCEDURE**



### ENGINE SECURING

LIVE ENGINE POWER.....	ADJUSTED
LANDING GEAR.....	UP
FLAPS .....	UP
X ENGINE POWER LEVER .....	IDLE
X ENGINE PROPELLER .....	FEATHER
→ <i>CHECK FEATHER</i>	
X ENGINE MIXTURE .....	CUT OFF
X ENGINE ALTERNATOR .....	OFF
X ENGINE FUEL SELECTOR.....	OFF
X ENGINE MAGNETOS .....	OFF
X ENGINE FUEL PUMP .....	OFF
X ENGINE COWL FLAPS .....	CLOSED
FUEL SELECTORS.....	CROSSFEED AS NECESSARY

### PROPELLER OVERSPEED

POWER LEVERS (AFFECTED ENGINE) .....	IDLE
OIL PRESSURE .....	CHECK
PROPELLERS (AFFECTED ENGINE) .....	MINIMUM RPM
SPEED .....	IDLE
POWER (AFFECTED ENGINE) .....	ADJUSTED

**LAND AS SOON AS POSSIBLE**

### INFLIGHT RESTART

POWER LEVERS (AFFECTED ENGINE) .....	1 CM
FUEL SELECTOR (AFFECTED ENGINE) .....	ON
MAGNETOS (AFFECTED ENGINE) .....	ON
FUEL PUMP (AFFECTED ENGINE) .....	FULL RICH
POWER LEVERS (AFFECTED ENGINE) .....	FULL
STARTER.....	AS NECESSARY
POWER LEVERS (AFFECTED ENGINE) .....	IDLE
→ <i>Stay idle while engine is warming up</i>	
ALTERNATOR.....	ON
BREAKERS PANEL .....	CHECK

### LOW OIL PRESSURE

POWER (AFFECTED ENGINE) .....	IDLE
OIL TEMPERATURE.....	CHECK

**IF OIL TEMPERATURE IS RISING APPLY « PRECAUTIONARY ENGINE  
SHUTDOWN » CHECK-LIST**

**ONE ENGINE INOPERATIVE APPROACH**

ALTIMETERS ..... SET, COMPARED  
FUEL SELECTORS.....STOP CROSSFEED OPERATIONS

**SPEED AND FINAL CONFIGURATION : 90 kt, FLAPS APPROACH  
DO NOT EXTEND GEAR BEFORE REACHING FINAL DESCENT**

**4.3. AVIONIC FAILURES**

**ATTITUDE FAILURE IN IMC**

ATTITUDE REFERENCE..... STBY HORIZON  
PFD AHRS SOURCE ..... SWITCH

**IF UNSUCCESSFUL, SEEK VMC CONDITIONS AS SOON AS PRACTICAL.  
USE STBY HORIZON AS SOLE ATTITUDE REFERENCE**

**4.4. FIRE**

**ENGINE FIRE ON GROUND**

MIXTURES..... CUT OFF  
POWER LEVER..... FULL  
STARTER ..... ENGAGE  
FUEL SELECTOR..... OFF  
BATTERY..... OFF

**EVACUATE THE AIRCRAFT**

**ELECTRICAL FIRE ON GROUND**

BATTERY..... OFF  
ALTERNATOR ..... OFF  
MIXTURES..... CUT OFF  
POWER LEVER..... IDLE  
MAGNETOS..... OFF  
FUEL SELECTORS ..... OFF

**EVACUATE THE AIRCRAFT**

**ELECTRICAL FIRE IN FLIGHT**

BATTERY..... OFF  
ALTERNATOR ..... OFF  
ALL ELECTRICAL SWITCHES..... OFF  
BREAKERS..... DISENGAGED

**RE-ENGAGE BATTERY, ALTERNATOR AND BREAKERS ONE BY ONE IF  
NECESSARY**

#### 4.5. LANDING GEAR

##### LANDING GEAR UNSAFE WARNING

GEAR LEVER ..... RECYCLED

**IF LANDING GEAR EXTENSION IS UNSUCCESSFUL APPLY « MANUAL GEAR EXTENSION » CHECK-LIST**

##### MANUAL LANDING GEAR EXTENSION

SPEED ..... < 100 KT  
GEAR LEVER.....DOWN  
BREAKER LANDING GEAR ..... DISENGAGED  
EMERGENCY GEAR SWITCH ..... ACTIVATE  
LANDING GEAR.....DOWN, 3 GREENS

#### 4.6. MISCELLANEOUS

##### FLAPS SYSTEM MALFUNCTION

FLAPS CONTROL ..... CHECK  
BREAKERS..... CHECK

**IF FLAPS STAY JAMMED, USE TABLE BELOW :**

FLAPS	APPROACH SPEED	LANDING DISTANCE
UP	90 kt	D*1.6
APP	85 kt	D*1.4

##### UNINTENTIONAL SPIN

POWER LEVERS ..... IDLE  
RUDDER..... FULL OPPOSITE TO ROTATION  
AILERONS..... NEUTRAL  
STICK..... FULL FORWARD  
FLAPS..... UP

**WHEN ROTATION STOPS :**

RUDDER..... NEUTRAL  
STICK..... SMOOTHLY RECOVER

## **5. PERFORMANCES**

### **5.1. USE OF PERFORMANCE CHARTS**

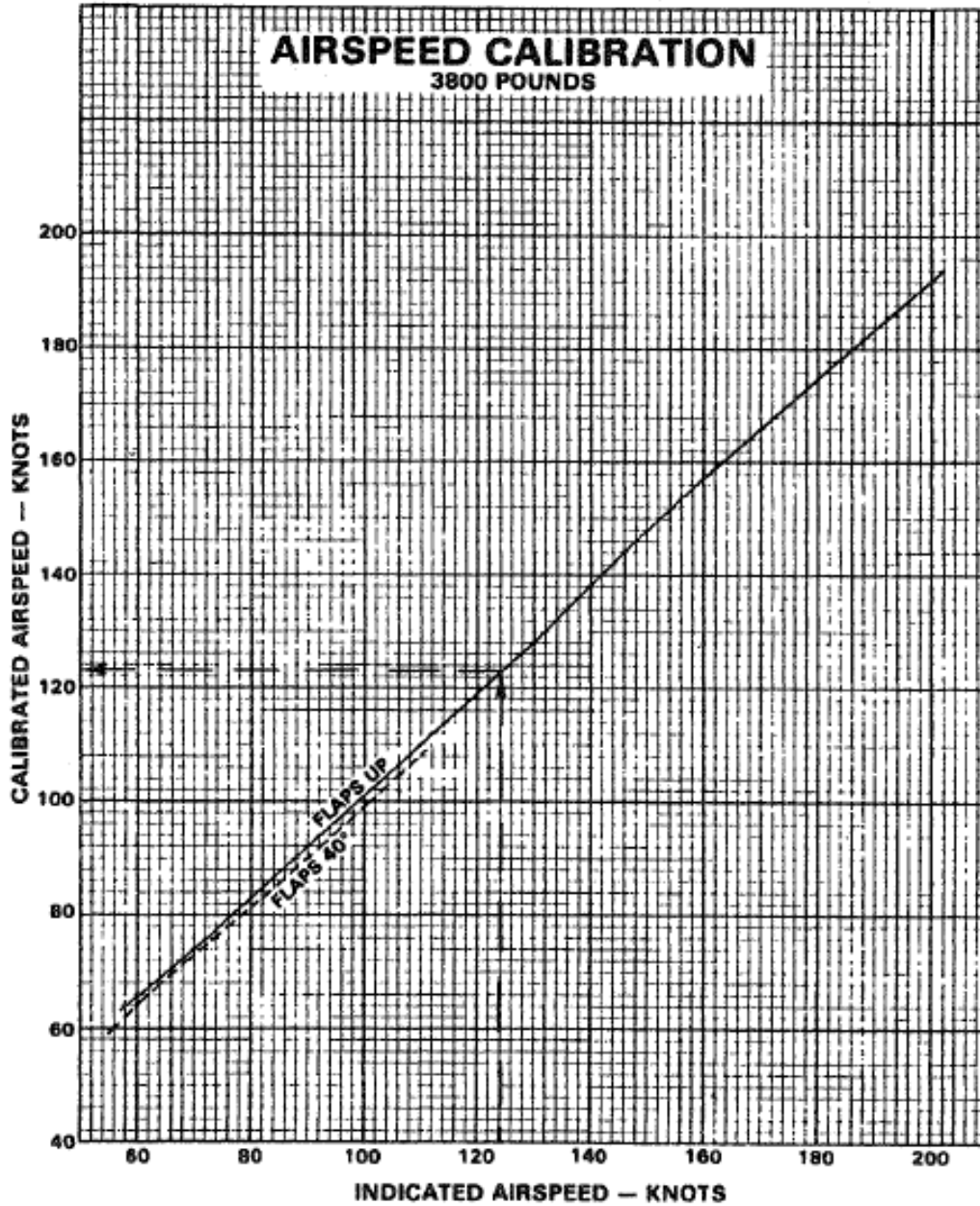
Performances data are presented in tabular or graphical form to illustrate the effect of different variables such as altitude, temperature and weight. Given information is sufficient to plan the mission with required precision and safety.

However, performances charts have been established by test pilots, on board of brand-new aircrafts. Thus although not exploiting aircraft under part-CAT regulation, C3P requires the use of pondering coefficient for take-off, landing, and climb performance charts. The pilot must be assured during flight preparation that:

- **Take-off distance \* 1.2 < TODA**
- **Accelerate-stop distance \* 1.3 < ASDA**
- **Climb gradient – 0.7 % > Required *OBSTACLE* climb gradient**
- **Landing distance \* 1.7 < LDA**

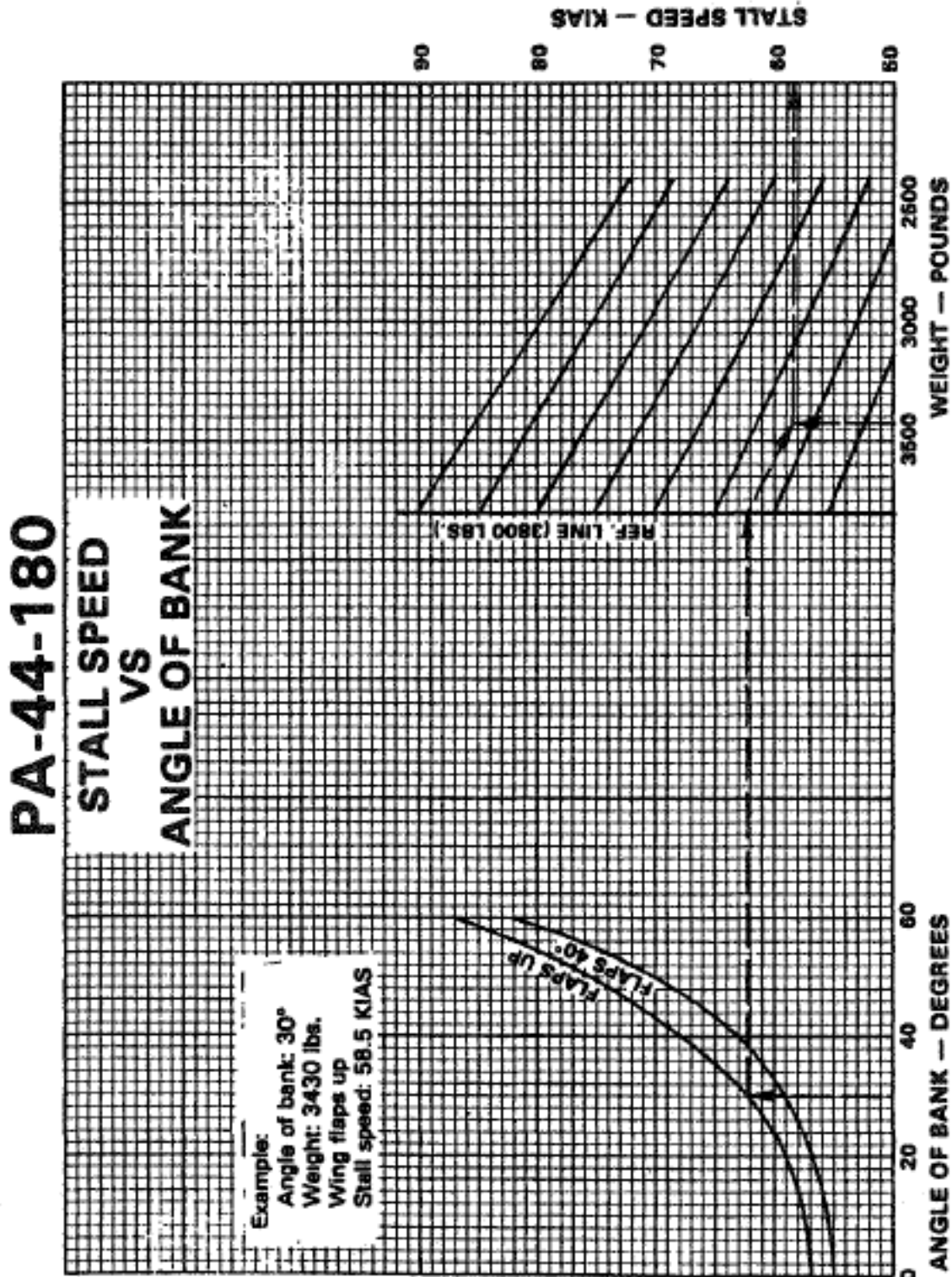
Additional information is provided for each table or graph.

## 5.2. AIRSPEED INDICATOR SYSTEM CALIBRATION

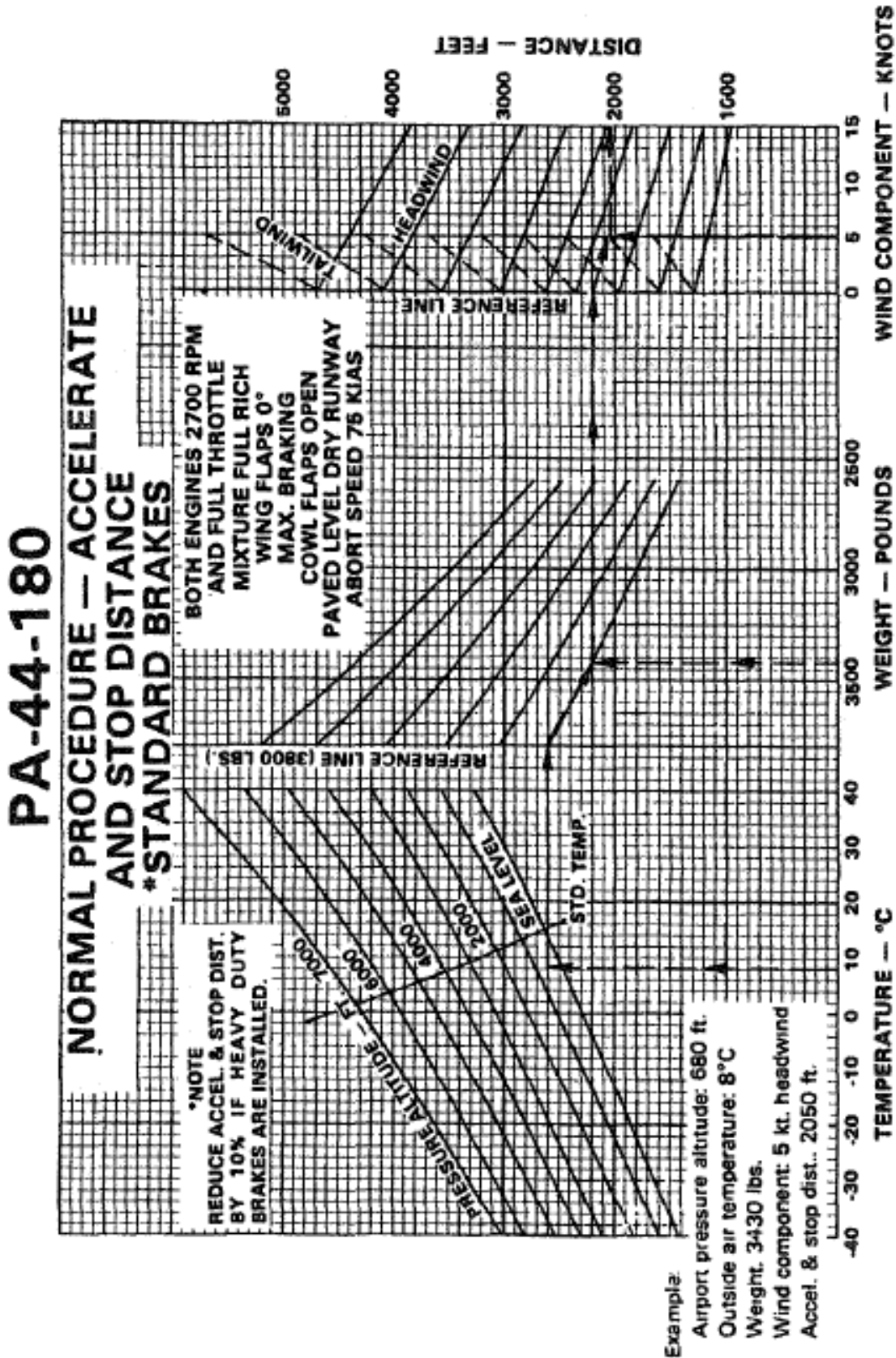


Example:  
Indicated airspeed: 124 knots  
Flaps up  
Calibrated airspeed: 123 knots

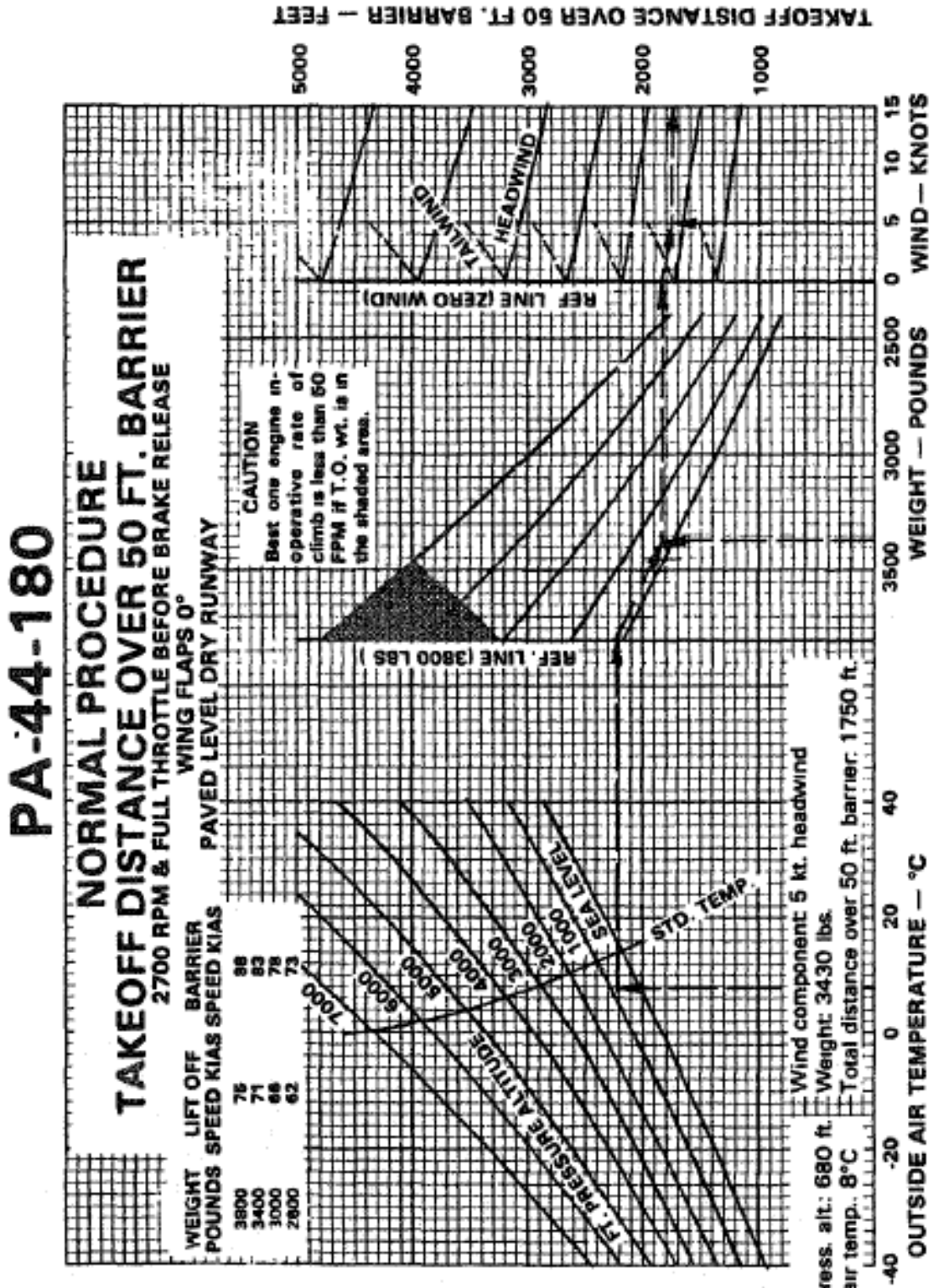
**5.3. STALL SPEED VS ANGLE OF BANK**



**5.4. ACCELERATE-STOP DISTANCE**



**5.5. TAKE-OFF PERFORMANCE**



Example:

Airport press. alt.: 680 ft.

Weight: 3430 lbs.

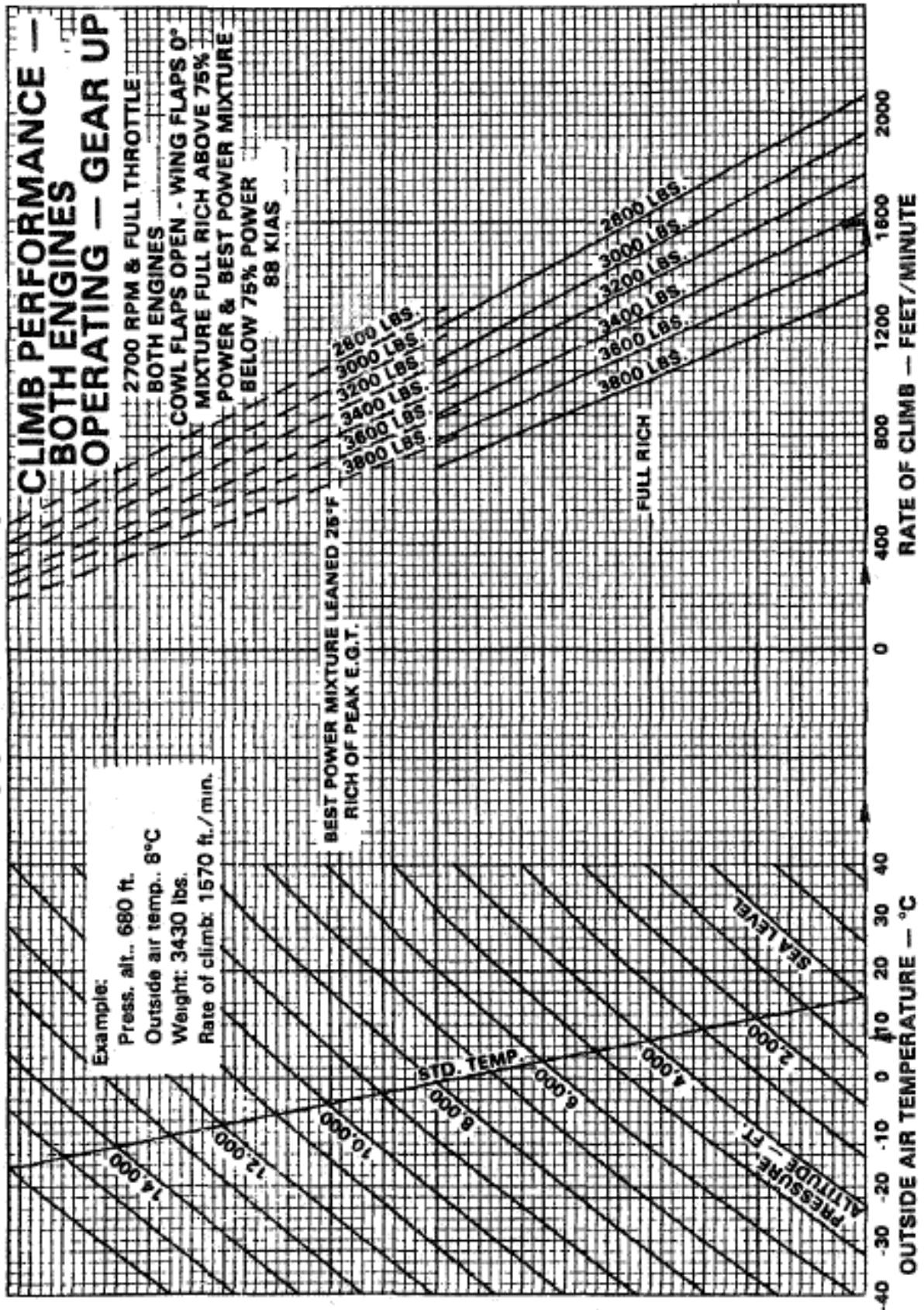
Outside air temp.: 8°C

Total distance over 50 ft. barrier: 1750 ft.

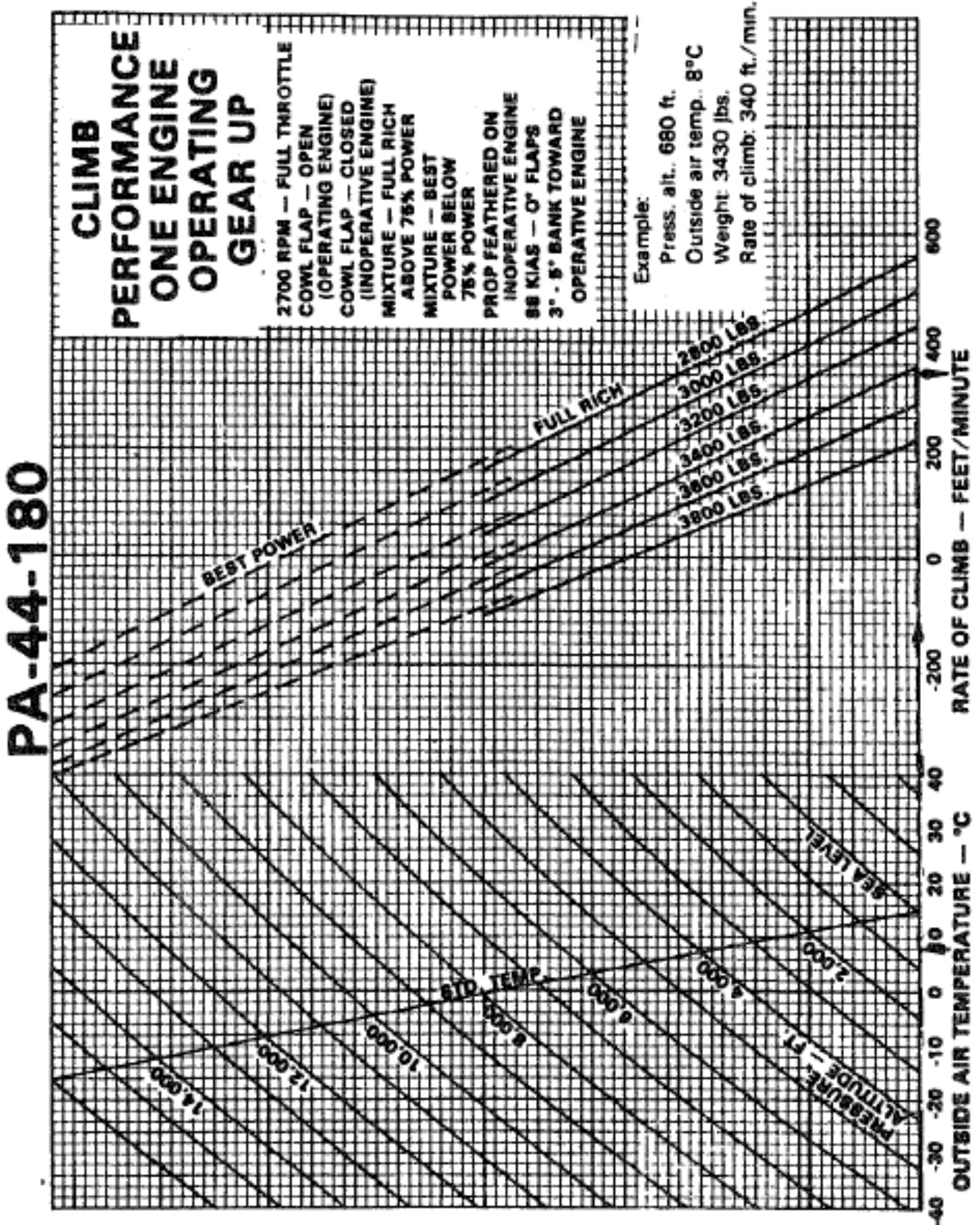


**5.6. TAKE-OFF RATE OF CLIMB BOTH ENGINE OPERATING**

**PA-44-180**



**5.7. ONE-ENGINE RATE OF CLIMB AT Vyse**



**5.8. CRUISE PERFORMANCE**

Press. Alt. Feet	Std. Alt. Temp. °C	99 BHP - 55% Rated Power Approx. Fuel Flow-9.3 Gal/Hr.* RPM AND MAN. PRESS. 2100 2200 2300 2400	117 BHP - 65% Rated Power Approx. Fuel Flow-10.3 Gal/Hr.* RPM AND MAN. PRESS. 2100 2200 2300 2400	135 BHP - 75% Rated Power Approx. Fuel Flow-11.2 Gal/Hr.* RPM AND MAN. PRESS. 2200 2300 2400	Press. Alt. Feet
SL	15	22.2 21.7 21.2 20.7	24.5 24.0 23.4 22.9	26.4 25.8 25.2	SL
1000	13	21.9 21.4 21.0 20.4	24.2 23.7 23.1 22.6	26.1 25.5 24.9	1000
2000	11	21.6 21.1 20.7 20.2	23.9 23.4 22.9 22.3	25.8 25.2 24.6	2000
3000	9	21.3 20.8 20.4 19.9	23.6 23.1 22.6 22.1	25.4 24.9 24.4	3000
4000	7	21.0 20.6 20.1 19.7	23.2 22.7 22.3 21.8	FT 24.7 24.1	4000
5000	5	20.8 20.3 19.9 19.4	22.9 22.4 22.0 21.5	— FT 23.8	5000
6000	3	20.5 20.2 19.6 19.2	22.6 22.1 21.7 21.3	— FT	6000
7000	1	20.2 19.7 19.3 18.9	FT 21.8 21.5 21.0	—	7000
8000	-1	19.9 19.5 19.1 18.6	FT 21.2 20.7	—	8000
9000	-3	19.6 19.2 18.8 18.4	— FT 20.5	—	9000
10,000	-5	19.3 18.9 18.5 18.1	— FT	—	10,000
11,000	-7	FT 18.6 18.3 17.9	—	—	11,000
12,000	-9	— FT 18.0 17.6	—	—	12,000
13,000	-11	— FT 17.4	—	—	13,000
14,000	-13	— FT	—	—	14,000

NOTE: To maintain constant power, add approximately 1% manifold pressure for each 6°C above standard, subtract approximately 1% for each 6°C below standard.

**5.9. LANDING PERFORMANCE**

# PA-44-180

## LANDING DISTANCE OVER 50 FT. BARRIER

**\*STANDARD BRAKES**  
**SHORT FIELD EFFORT**

WING FLAPS 40° — POWER OFF — COWL FLAPS OPEN  
PAVED LEVEL DRY RUNWAY  
FULL STALL TOUCHDOWN  
APPROACH SPEED AS SCHEDULED

Example:

Airport press. alt.: 680 ft.

Outside air temp.: 8°C

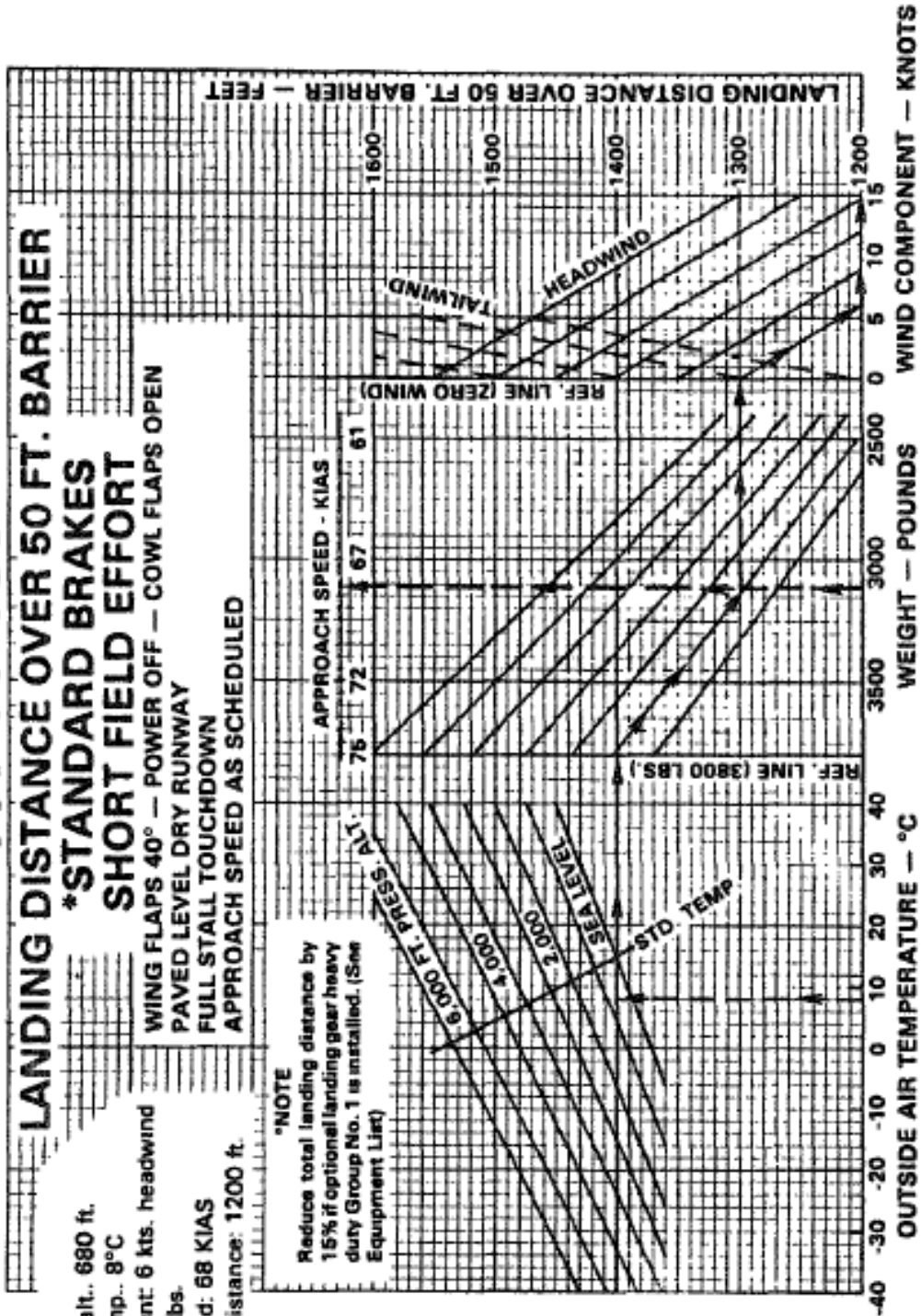
Wind component: 6 kts. headwind

Weight: 3107 lbs.

Approach speed: 68 KIAS

Total landing distance: 1200 ft.

**\*NOTE**  
Reduce total landing distance by 15% if optional landing gear heavy duty Group No. 1 is installed. (See Equipment List)



## **6. MASS AND BALANCE**

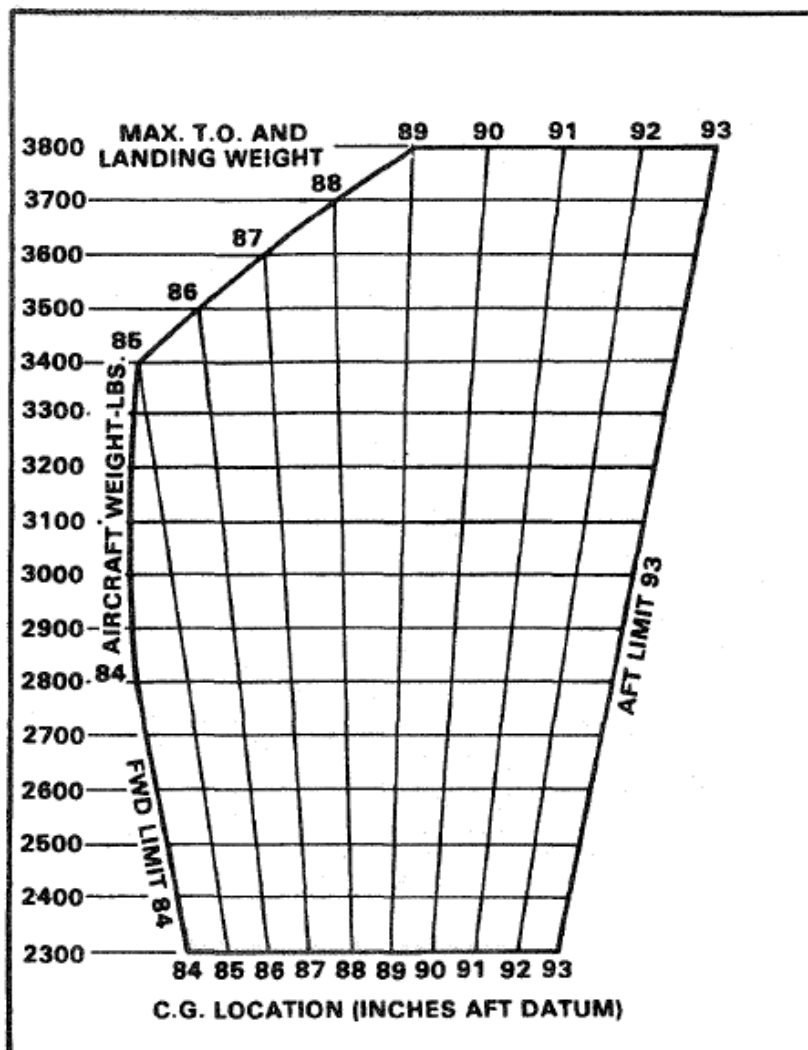
### **6.1. DEFINITION OF MASSES**

C3P only uses the actual weight calculation method for crew, passengers and baggage (both cabin and hold). The determination of the actual weight will be done before each flight with a scale. The weighing will be under the responsibility of the captain. The masses will be rounded to the next nearest kilogram.

**In case of load change (due to passengers or pieces of luggage), new weight and balance sheet must be made.**

**6.2. MASS & BALANCE CHART**

	Weight (Lbs)	Arm Aft Datum (Inches)	Moment (In-Lbs)
Basic Empty Weight	2400	86.7	208080
Pilot and Front Passenger		80.5	
Passengers (Rear Seats)		118.1	
Fuel (108 Gallon Maximum Usable)		95.0	
Baggage (200 Lb. Limit)		142.8	
Ramp Weight (3816 Lbs. Max.)			
Fuel Allowance for Engine Start, Taxi & Runup	-16.0	95.0	-1520
Take-off Weight (3800 Lbs. Max.)			
Take-off Weight			
Minus Estimated Fuel Burn-off (climb & cruise) @ 6.0 Lbs/Gal.		95.0	
Landing Weight			



## 7.1. INTRODUCTION

## 7. MIMIMUM EQUIPEMENT LIST

RESERVED

## **8. AIRCRAFT SYSTEMS**

### **8.1. INTRODUCTION**

**RESERVED**