This is the Flight Manual which forms part of the Certificate of Airworthiness for aircraft G-BOTE

CIVIL AVIATION AUTHORITY 31-7-91

SECTION I. GENERAL

A. Registration Particulars

1. Airplane designation: PIPER Model PA-28-151
2. Registration Marks: G-BOTE
3. Constructor's Serial Number: 28-7515436
4. Designed and Constructed by: Piper Aircraft Corporation
   Vero Beach, Florida, U.S.A.
   32960
5. F.A.A. Certificate of Airworthiness for Export:
   Number: _____
   Date of Issue: _____
6. Model PA-28-151 British Flight Manual, Piper Aircraft Corporation Report VB-575, Approved by the Secretary, Civil Aviation Authority on: _____.
7. This airplane shall be operated in accordance with the limitations in Section II and any additional limitations in the Supplements contained in Section VI.

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B. Table of Contents

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C. Amendment System

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

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

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

PREPARED	PIPER AIRCRAFT CORP. DEVELOPMENT CENTER, VERO BEACH, FLA.	REPORT VB-575 MODEL PA-28-151
CHECKED		
APPROVED		PAGE 7

UNITED STATES F.A.A.
AMENDMENT RECORD SHEET

REVISION NO.	DATE OF REVISION. DAY	MO.	YR.	REVISED BY	APPROVAL DATE (CAA) DAY	MO.	YR.	REVISION TITLE	PAGES AFFECTED
1	25	3	74	R.K.				Deleted Reference to Aerobatic Manoeuvres	22 & 23
								Qualified Battery Capacity	36
					15	5	74	Deleted Propeller Check	45
				L.H. Trompler FAA DOA SO-1 APPROVED				Changed Example & Climb Speed at Light Weight	70
								Redrawn	72
2	15	10	74	R.K.				Deleted Reference to Aerobatic Manoeuvres	14, 15, 16 & 20
					27	11	74	Specified Battery Capacity	36
				Ward Evans FAA DOA SO-1 APPROVED				Corrected T.O. Distance Charts	63, 66 61, 64
3	1	8	75	L.M.				Add new wing-flaps extended speed and serial number effectivity.	19, 20, 21, 26, 49
				Ward Evans FAA DOA SO-1 APPROVED	27	10	75		
4	11	5	76	RM				Revised Applicability up to Serial No. 28-7615999	Title & 7
				Ward Evans FAA DOA SO-1 APPROVED					
5	23	04	11	MH	01	09	10	MOD # BAL/MOD/181 GAMIN 430 APPROVED B-RNAV EASA AMC 20-4	8A, 8B, 8C.

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

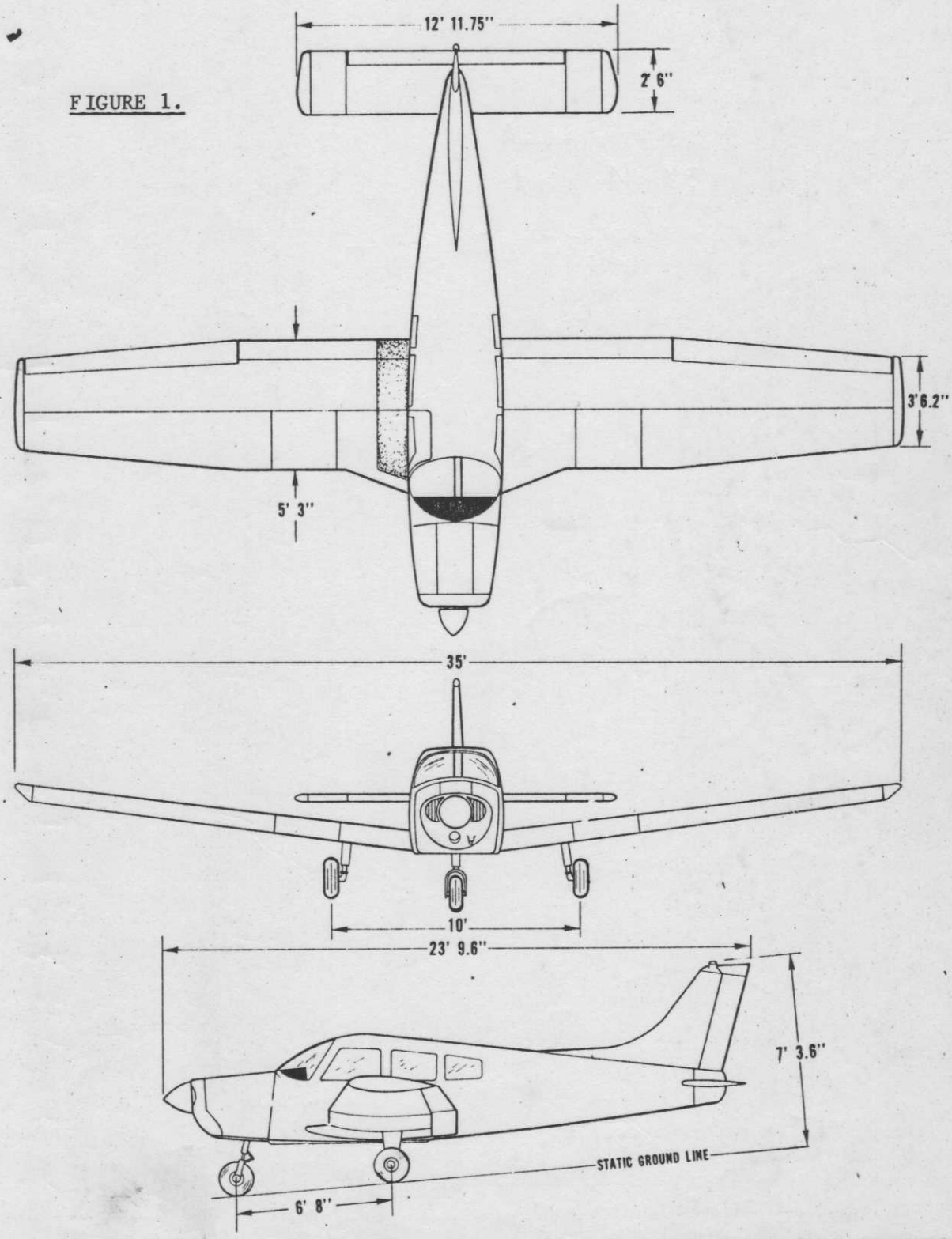
C.A.A. AMENDMENT RECORD SHEET

REVISION NO.	DATE OF REVISION			REVISED BY	APPROVAL DATE (CAA)			REVISION TITLE	PAGES AFFECTED.
	DAY	MO.	YR.		DAY	MO.	YR.		
								AIRWORTHINESS NOTICE No 88	PAGE 35
					23	06	2000	CAACS Iss 1 PERFORMANCE CORRECTIONS.	OPPOSITE PAGE 52

SECTION I. GENERAL, (continued)

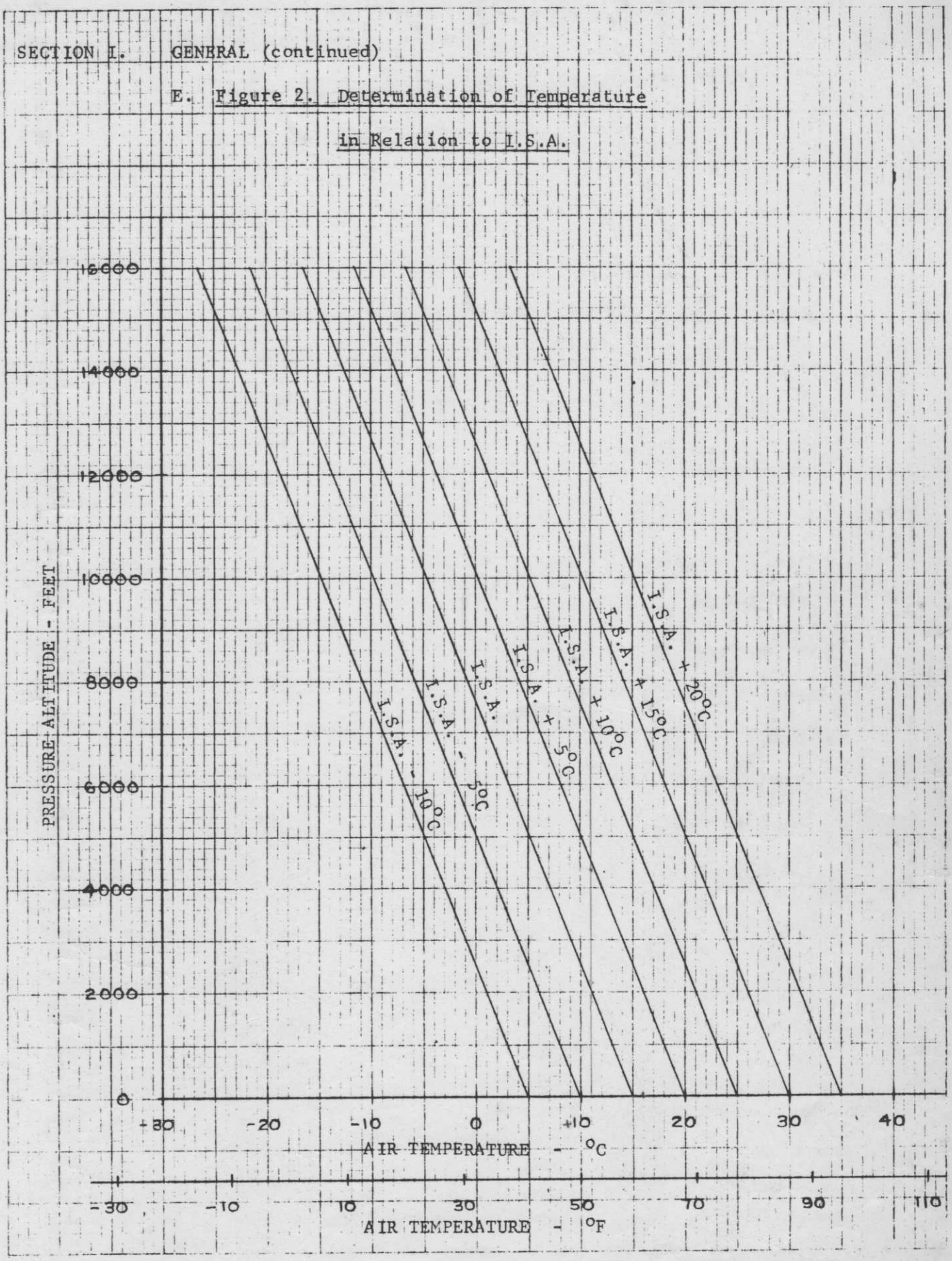
D. General Arrangement Drawing (not to scale)

FIGURE 1.



SECTION I. GENERAL (continued)

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



SECTION I. GENERAL, (continued)

F. Definitions

1. AIR TEMPERATURE

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

2. ALTITUDE

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

3. I.S.A.

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

4. GRADIENT OF CLIMB

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

SECTION I. GENERAL, (continued)

5. GROSS PERFORMANCE

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

6. NET PERFORMANCE

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

7. HARD RUNWAY

A surface such as concrete or tarmac.

8. HEIGHT

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

9. WEIGHT

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

10. A.S.I.R.

The uncorrected Air Speed Indicator Reading.

SECTION I. GENERAL, (continued)

11. I.A.S.

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

12. E.A.S.

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

13. T.A.S.

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

14. TAKE-OFF SAFETY SPEED

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

15. MANOEUVRING SPEED

The maximum speed for full application of primary flight controls.

16. V_{NO}

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

SECTION II. LIMITATIONS

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

A. The following weights given are maximum limitations.

1. The Maximum Take-off Weight is 2325 pounds.
2. The Maximum Landing Weight is 2325 pounds.
3. The Maximum Weight for the manoeuvres listed on Page 27 is 1950 pounds.
4. The aeroplane is not structurally limited by a zero fuel weight limit.

B. Baggage Loading *

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

C. Fuel System

1. There are no fuel loading limitations. However, it is recommended that the fuel load be symmetrical to provide better roll control.
2. The word "gallon" as used throughout this report means U.S. gallon unless otherwise stated.
3. The unusable fuel in this aircraft has been determined as 1.0 gallon in each wing in critical flight attitudes. (1.0 gallon is the total per side).

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

SECTION II. LIMITATIONS (continued)

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

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

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

D. Centre of Gravity

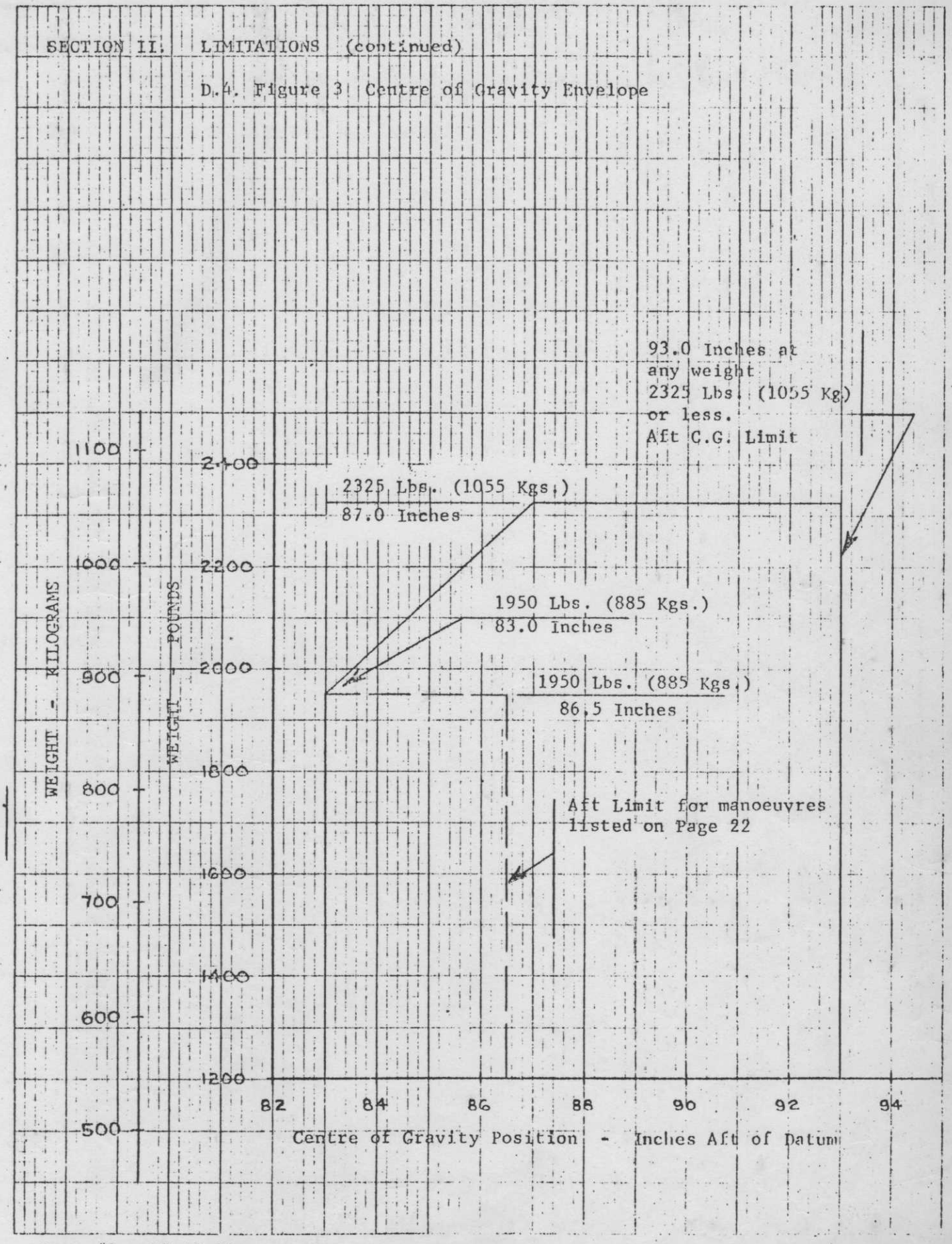
1. The aircraft loading is to be distributed so that the centre of gravity lies between the limits of 83.0 inches aft of the datum at 1950 pounds, 87.0 inches aft of the datum at 2325 pounds and an aft limit of 93.0 inches aft of the datum at 2325 pounds and below. The c.g. limitations have a straight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

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

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

SECTION II. LIMITATIONS (continued)

D.4. Figure 3 Centre of Gravity Envelope



Rev #2

SECTION II. LIMITATIONS (continued)

E. Power-Plant Limitations

ENGINE

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

PROPELLER

Sensenich 74 DM6-0-58

Diameter: 74 Inches Maximum
72 Inches Minimum

Pitch: 58 Inches

Static RPM at maximum permissible throttle setting:

Not over 2375 RPM

Not under 2275 RPM

No additional tolerance permitted.

McCauley 1C160EGM7653

Diameter: 76 Inches Maximum
74.5 Inches Minimum

Pitch: 53 Inches

Static RPM at maximum permissible throttle setting:

Not over 2400 RPM

Not under 2300 RPM

No additional tolerance permitted.

FUEL

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

SECTION II. LIMITATIONS (continued)

OIL

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

OIL TEMPERATURE

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

OIL PRESSURE

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

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

FUEL PRESSURE

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

ENGINE SPEED LIMITATIONS

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

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

SECTION II. LIMITATIONS (continued)

FUEL/AIR MIXTURE CONTROL

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

F. Airspeed Limitations

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

2. NEVER EXCEED SPEED, V_{NE}*

Is 185 MPH I.A.S. (160 Knots).

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

Is 145 MPH - I.A.S. (126 Knots). During normal cruising flight, the aeroplane should not be flown at a speed greater than V_{NO}. The aeroplane shall only be flown at speeds between the normal operating limit speed and the never exceed speed at the discretion of the pilot, having due regard to the prevailing atmospheric conditions.

4. MANOEUVRING SPEED*

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

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

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

Rev #3

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

SECTION II. LIMITATIONS (continued)

WING-FLAPS EXTENDED SPEED, V_{FE}* (S/N 28-7615001 and up) Is 119 MPH-IAS (103 KTS.). The wing flaps shall not be extended when the aeroplane is flying at a speed greater than V_{FE}.

6. ENTRY SPEED FOR MANOEUVERS LISTED ON PAGE 22

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

7. AIRSPEED INDICATOR COLOR MARKINGS

Green Arc	
(Normal Operating Range)	65 MPH to 140 MPH (E.A.S.)
Yellow Arc	
(Caution Range-Smooth Air)	140 MPH to 176 MPH (E.A.S.)
White Arc	
(Flaps Extended Range)	58 MPH to 125 MPH (E.A.S.) (S/N 28-7415001 thru S/N 28-7515449)
(Flaps Extended Range)	58 MPH to 115 MPH (E.A.S.) (S/N 28-7615001 and up)
Radial Red Line	
(Never Exceed Speed-Smooth Air)	176 MPH (E.A.S.)

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

SECTION II. LIMITATIONS (continued)

8. SUMMARY OF AIRSPEEDS

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

G. Miscellaneous Limitations

1. CATEGORY

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

SECTION II. LIMITATIONS (continued)

2. VFR and IFR FLIGHT

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

3. FLIGHT BY NIGHT

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

4. FLIGHT AT HIGH ALTITUDE

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

5. FLIGHT IN ICING CONDITIONS

The aeroplane is not approved for flight in icing conditions.

Rev. 1

6. APPROVED FLIGHT MANOEUVRES*

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

(1) Steep Turns

(2) Lazy Eights

(3) Chandelles

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

SECTION II. LIMITATIONS (continued)

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

Rev. 1 (c) All approved flight manoeuvres listed on page 22, Item 6 are prohibited above a gross weight of 1950 lbs.

(d) Aerobatic manoeuvres are not permitted.

7. FLIGHT LOAD FACTORS

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

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

8. MINIMUM CREW

The minimum crew is one pilot.

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

SECTION II. LIMITATIONS (continued)

9. NUMBER OF OCCUPANTS

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

10. SMOKING

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

11. CLIMATIC CONDITIONS

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

A minimum temperature has not been established.

12 AUTOMATIC-PILOT LIMITATIONS

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

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

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

SECTION II. LIMITATIONS (continued)

13. ELECTRIC PITCH TRIM LIMITATION

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

14. MAXIMUM ALTITUDE

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

15. ADDITIONAL PLACARDS

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

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

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

(c) In full view of the pilot:

"Take-off Checklist

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

SECTION II. LIMITATIONS (continued)

(d) In full view of the pilot:

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

Rev. #3

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

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

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

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

16. VACUUM GAUGE

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

SECTION II. LIMITATIONS (continued)

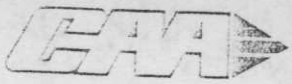
17. ENGINE STARTER

Limit engine starting to 30 second periods.

18. STALL WARNING SYSTEM

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

Civil Aviation Authority
Safety Regulation Group
Aviation House
South Area
Gatwick Airport
Gatwick
West Sussex RH6 0YR
Tel: Switchboard 0293 567171
Direct Dial 0293 573149
Telex: 878753 Fax: 0293 573999



Aircraft Maintenance
Standards Department

9/97/CtAw/171

2 February 1990

CAA EMERGENCY AIRWORTHINESS DIRECTIVE 001-02-90
PIPER PA-28 SERIES AIRCRAFT
PLACARDING OF THE CURTIS FUEL STRAINER DRAIN VALVE

BACKGROUND

A number of serious accidents have occurred as a result of sudden loss of power after take-off caused by the fuel strainer drain valve not being closed properly after use on Piper PA-28 series aircraft.

APPLICABILITY

Applicable to Piper PA-28 series aircraft fitted with a Curtis fuel strainer drain valve, including those modified in accordance with CSE Service Bulletin No 6/75.

COMPLIANCE

Compliance is required not later than 2 weeks from the effective date of this Directive which is 7 February 1990.

REQUIREMENT

Modify by installing a placard adjacent to the fuel strainer drain valve stating:

WARNING
ENSURE FUEL DRAIN IS CLOSED AFTER USE

NOTE: Letters to be clear and at least 4 mm high on a contrasting background.

Insert a copy of this Directive into the Limitations Section of the Pilot Operating Handbook/Flight Manual.

Queries regarding this Directive should be referred to the General Aviation Section at the above address.

R J TEW
Aircraft Maintenance Approvals Section

SECTION III. EMERGENCY PROCEDURES

A. INTRODUCTION

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

B. ENGINE FIRE DURING START

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

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

C. ENGINE POWER LOSS DURING TAKE-OFF

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

SECTION III. EMERGENCY PROCEDURES (continued)

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

SECTION III. EMERGENCY PROCEDURES (continued)

D. ENGINE POWER LOSS IN-FLIGHT

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

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

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

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

SECTION III. EMERGENCY PROCEDURES (continued)

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

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

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

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

E. POWER OFF LANDING

1. If loss of power occurs at altitude:

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

   (b) Look for a suitable field.

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

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

SECTION III. EMERGENCY PROCEDURES (continued)

4. When a suitable field has been located:

   (a) Establish spiral pattern around the field

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

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

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

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

5. When committed to a landing:

   (a) Ignition - off

   (b) Master Switch - off

   (c) Fuel Selector - off

   (d) Mixture - idle cut-off

   (e) Seat Belt and Harness - tight

F. FIRE

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

   (a) Visual observation of flames or smoke

   (b) Smell

   (c) Presence of unusual heat in the cabin

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

   (a) Visual observation

SECTION III. EMERGENCY PROCEDURES (continued)

(b) Instrument readings

(c) Discerning the character of the smoke

3. Electrical Fire

(a) Master Switch - off

(b) Vents - open

(c) Cabin Heat - off

(d) Land as soon as practical

4. Engine Fire

(a) Mixture Control - idle cut-off

(b) Fuel Selector - off

(c) Electric Fuel Pump - check off

(d) Master Switch - off

(e) Magneto Switch - off

(f) Throttle - closed

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

(h) Proceed with POWER OFF LANDING procedure.

G. LOSS OF OIL PRESSURE

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

SECTION III. EMERGENCY PROCEDURES (continued)

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

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

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

H. LOSS OF FUEL PRESSURE

1. Electric Boost Pump - on

2. Fuel Selector - check on full tank

3. If problem is not an empty fuel tank:

   (a) Land as soon as practical

   (b) Have engine driven fuel pump checked

SECTION III. EMERGENCY PROCEDURES (continued)

I. HIGH OIL TEMPERATURE

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

J. ALTERNATOR FAILURE

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

SECTION III. EMERGENCY PROCEDURES (continued)

(c) Land as soon as practical.

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

K. ENGINE ROUGHNESS

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

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

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

(b) Electric Fuel Pump - on.

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

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

SECTION III. EMERGENCY PROCEDURES (continued)

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

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

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

L. SPINS

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

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

M. OPEN DOOR

To close the door in flight, proceed as follows:

SECTION III. EMERGENCY PROCEDURES (continued)

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