

AMERICAN CHAMPION AIRCRAFT CORPORATION
ROCHESTER, WI 53167

FAA Approved
Airplane Flight Manual
American Champion Model 8KCAB
with Lycoming Engine AEIO-360-H1B (180 HP)

This manual only for aircraft
with serial numbers beginning with S/N 934-03 and up.

REGISTRATION NUMBER: VH-OPD

SERIAL NUMBER: 1033-2007

9/1/03
SSR/03

**THIS MANUAL IS PART OF THE REQUIRED EQUIPMENT
AND MUST REMAIN IN THE AIRPLANE AT ALL TIMES.**

This AFM distinguishes FAA approved data from unapproved data by noting "FAA APPROVED" in the upper right hand corner of each page containing such FAA approved data. Other information is provided by American Champion Aircraft Corporation as an addendum to the manual and is included in the unapproved portion of the manual.

Revision "H"

APPROVED:

For:

Joseph Mass

Royce Prathers

Manager, Chicago Aircraft Certification Office

Date:

25 NOV 2003

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1.0 Limitations: Compliance with this Section is Mandatory

1.1 Normal Category Limitations

1.1.1 Airspeed Limitations

Speed Designation	Calibrated Air Speed		Airspeed Indicator Marking
	MPH	Knots	
Maneuvering (V _A)	107	93	None
Normal Operating Range	54-160	47-139	Green Arc
Maximum Structural Cruising (V _{NO})	160	139	
Caution Range	160-200	139-174	Yellow Arc
Never-Exceed (V _{NE})	200	174	Red Radial Line

Green Arc extends from power-off stall speed (V_{S1}) to maximum structural cruising speed (V_{NO}).

Yellow Arc extends from maximum structural cruising speed to never-exceed speed (V_{NE}). Operate in this range with caution, and only in smooth air.

Red Radial Line marks the never-exceed speed, which is the maximum safe airspeed.

1.1.2 Powerplant Limitations

Engine:	Lycoming AEIO-360-H1B
Engine Limits:	For all operations, 2700 RPM (180 HP)
Fuel:	91/96 minimum grade aviation gasoline (100/130 may be used 100% of the time).
Propeller:	Hartzell Constant Speed HC-C2YR-4CF/FC7666A-2 Diameter Limits 72" to 74" Pitch Settings at 30 in. st. low 11.0 ± 0.2° high 28.0 ± 1.0° Caution: "Avoid Cont. RPM 2600-2700 Acro Only."
Propeller: (Alternate) (2-Blade)	MT Constant Speed MTV-15-B-C/C188-34 Diameter Limits 73" to 74"
Propeller: (Alternate) (3-Blade)	MT Constant Speed MTV-9-B-C/C188-18a or MTV-9-B-C/C188-18b Diameter Limits 73" to 74"

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Powerplant Instrument Markings

Instrument	Markings	
Cylinder Head Temperature	Green Arc Red Radial	90°-500° F 500° F
Fuel Pressure	Green Arc Red Radial	14-45 psi 14 and 45 psi
Oil Temperature	Green Arc Red Radial	100°-245° F 245° F
Oil Pressure	Green Arc Yellow Arc Red Radial	60-100 psi 25-60 psi 25 psi & 100 psi
Tachometer (Hartzell)	Green Arc Red Arc Green Arc Red Arc Red Radial	500-2000 RPM 2000-2250 RPM 2250-2700 RPM 2600-2700 RPM 2700 RPM
Tachometer (MT)	Green Arc Red Arc Red Radial	500-2600 RPM 2600-2700 RPM 2700 RPM
Manifold Pressure	Red Radial	29 in.

1.1.3 Weight and Balance

Maximum Gross Weight	1950 Lbs.
Center-of-Gravity Limits	(+14.7 in.) to (+18.5 in.) at 1950 lb. (+11.5 in.) to (+18.5 in.) at 1550 lb. or less Straight line variation between points given.
Datum	Wing Leading edge

Each operator must assure that the airplane is properly loaded. See Section 4.0 for Weight and Balance procedures.

1.1.4 Flight Load Factors

Maneuvering Load Factors at 1800 lb. Gross Weight:

Normal Category:	Positive: +3.80 G
	Negative: -1.52 G

Maximum load factors for Normal Category operation are shown by the ends of the green arc on the accelerometer. Load factors within the yellow arc range are permitted only in Acrobatic Category.

1.1.5 Kinds of Operation

Only VFR, day or night, operation are approved. Flight into known icing conditions is not approved.

1.1.6 Heated Pitot Operation

When Pitot Heat is "ON," magnetic compass may deviate as much as 30°. Use Pitot Heat only as required.

1.1.7 Unusable Fuel

Any fuel remaining in the tanks when fuel gauge reads "E" (Empty) cannot be safely used in flight.

1.1.8 Placards

In Full View of Pilot:

"Normal Category Airspeed Limits

Maneuvering Speed 107 MPH (93 Knots) CAS
Demonstrated Crosswind Velocity 20 MPH (17 Knots)"

"Solo from front seat only. No acrobatic maneuvers, including spins, approved in normal category. Day or night VFR operation only. Flight into known icing prohibited. To recover from normal or inverted spin, use full opposite rudder and neutralize elevator"
(Standard)

"This airplane must be operated as a normal or acrobatic category airplane in compliance with the operating limitations stated in the form of placards, markings and manuals. Markings and placards (except accelerometer markings) refer to normal category only. See airplane flight manual for acrobatic category information weight and balance information and other operating limitations."

"No Smoking" (When Ashtrays are Not Installed)

"Magnetic Compass May Deviate As Much as 30° When Pitot Heat is On."
(When Pitot Heat is Installed)

On Tachometer Face (Hartzell Propeller Only)

“Avoid. Cont. RPM
2000-2250 All Oper.
2600-2700 Acro Only”

In Baggage Compartment

“Maximum Baggage 100 Lbs.”

On Forward Left Side Window

“Do Not Open Above 130 MPH”
“Alternate Emergency Exit Unlatch – Push Out Past Stop”

On Fuel Shutoff Control

“Fuel 40 Gal Useable - Down ‘ON’”

On Emergency Door Release Handle

“Emergency Door Release
Pull Pin – Pull Handle”

Adjacent to Fuel Gauge

“Fuel In Tank When Gauge Reads ‘E’ (Empty) Cannot Be Safely Used In Flight.”

Adjacent to Strobe Light Switch

“Turn Strobe Light Off When Taxiing in Vicinity of Other Aircraft or When Flying in Fog or Clouds. Standard Position Lights to be used for All Night Operations.”

On Front Seat Rear Leg (Adjustable Front Seat Only)

“Rear Seat P/N 7-1500 or 7-1501 and Rear Control Stick P/N 4-1711 Req'd with This Seat Installation.”

On Rear Control Stick (With Adjustable Front Seat Only)

“Rear Stick P/N 4-1711”

On Rear Seat Front Leg (With Adjustable Front Seat Only)

“Rear Seat P/N 7-1500” or “Rear Seat P/N 7-1501” (as Appropriate)

1.2 Acrobatic Category Limitations

1.2.1 Airspeed Limitations

With the exception of the maneuvering speed (V_A), all airspeed limitations given in section 1.1.1 are applicable to the Acrobatic Category. For the Acrobatic Category, the maneuvering speed is 132 MPH (CAS) at maximum gross weight (1800 lbs.). Since V_A decreases as operating weight decreases, subtract 3 MPH for each 100 lbs. decrease in operating weight below 1800 lbs. (See Section 2.1.8)

1.2.2 Powerplant Limitations

All Powerplant limitations given in Section 1.1.2 are applicable to the Acrobatic Category. In addition, the following limitations apply to the Acrobatic Category:

1. Minimum Acrobatic Oil: 6 Qts.
2. Avoid Extended Right Knife Edge Flight.
3. Avoid 2600-2700 RPM Acrobatic Flight.

1.2.3 Weight and Balance

Maximum Gross Weight	1800 Lbs.
Center-of-Gravity Limits	(+13.5 in.) to (+18.5 in.) at 1800 lb. (+11.5 in.) to (+18.5 in.) at 1550 lb. or less Straight line variation between points given.
Datum	Wing Leading edge

Carrying of baggage during acrobatics is prohibited.

Each operator must assure that the airplane is properly loaded. See section 4.0 for weight and balance procedures.

1.2.4 Flight Load Factors

Maneuvering Load Factors at 1800 lb. Gross Weight:

Acrobatic Category:	Positive: +6 G
	Negative: -5 G

Gust load factors are less than maneuvering load factors. Maximum load factors for Acrobatic Category operation are shown by red radial lines on the accelerometer. The accelerometer is required for Acrobatic Category operations.

1.2.5 Unusable Fuel

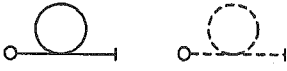
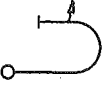
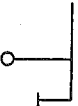
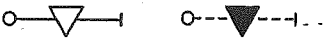
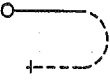



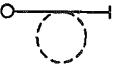

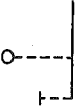
Any fuel remaining in the tanks when fuel gauge reads "E" (Empty) cannot be safely used in flight.

1.2.6 Inverted Flight

The inverted-fuel header tank provides fuel for at least 2.0 minutes of continuous inverted flight. As much as one minute of positive "g" flight may be required to completely refill an exhausted header tank.

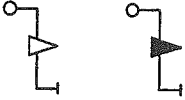
1.2.7 Maneuvers

Basic Approved Acrobatic Maneuvers and Recommended Entry Speeds

Maneuver	Aresti Symbol	Entry Speed IAS MPH	Remarks – Airspeeds I.A.S. MPH
Loop Normal – Inverted		140*	Enter 3.5 to 4 G's Speed at Top Approx. 40 MPH Exit 3.5 to 4 G's** Speed 140 – 150 MPH
Immelman		145*	Enter +4 G's Speed at Top Approx. 50 MPH Exit +1 G
Hammer Head Turn		140*	Enter +4.5 G's Speed at Top Before Turn: 40 MPH Exit +4.5 G's** 140 MPH
Snap Roll Normal & Inverted		90	Enter with Power Exit with Power No Full or Abrupt use of Flight Controls above V _A
English Bunt		70	Enter with or without Power -3.5 to -4.0 G's** when Pushing Thru from Vertical to Inverted Exit Inverted 140-150 MPH*
Vertical Slow Roll Up		180*	Enter 180 MPH Level Flight +4.5 Pull Up. Exit 40 MPH Up Push Over to Level Flight. Caution: Flight Above V _C (160 MPH-CAS) in Smooth Air Only
Vertical Slow Roll Down		60	Enter 60 MPH Push Over to Vertical Down Exit 150 MPH* Pull Out 4.5 G's** to Level Flight
Slow or Barrel Roll		130	Use Smooth Application of Controls No Full or Abrupt Use of Controls Above V _A
Outside Loop (Enter from the top)		70	Enter 70 MPH or Slower With or Without Power. Push 3.5 to 4 G's** to Inverted Speed at the Bottom 140-150 MPH* Add Full Power, Push Up 3.5 to 4 G's**. Exit Straight & Level 40-50 MPH
Horizontal Eight Inside – Outside		140*	Enter +4 G's Pull Up, Hold 45° Down Inverted, Enter Outside Loop 140 MPH* -3.5 to -4 G's. Exit From 45° Down Normal Flight – 140 MPH
Hammer Head Turn (Inverted Entry & Exit)		140*	Enter -3.5 to -4 G's Speed at Top Before Turn 40 MPH Exit From Vertical Down -3.5 to -4 G's** to Level Flight Inverted

1.2.7 Maneuvers (Continued)

Basic Approved Acrobatic Maneuvers and Recommended Entry Speeds

Maneuver	Aresti Symbol	Entry Speed IAS MPH	Remarks – Airspeeds I.A.S. MPH
Spin Normal – Inverted		Stall	Recover with Positive Movement of Stick to Neutral Position & Opposite Rudder Until Rotation Stops – Then Neutral Rudder & Smooth Recovery from Dive to Level Flight. Free Release at Control is <u>Not</u> Adequate for Recovery. Positive Movement of Controls by the Pilot is Required for Spin Recovery.

Note: Refer to Section 2.1.8 for acrobatic operation procedures that apply to all approved maneuvers.

Note: Variations or combinations of the above maneuvers are approved, provided that the speed and load factor limitations are not exceeded.

Note: The following maneuvers are not approved:

- (1) Tail Slide
- (2) Lomcevak

* No Full or Abrupt use of flight controls above V_A (Maneuvering Speed).

** Proper use and application of controls and maneuvering load factors are essential to speed control. Improper and/or inadequate application of maneuvering load factors may result in rapid acceleration resulting in unsafe flight situations.

2.0 Procedures

2.1 Normal Procedures

2.1.1 Emergency Fuel Pump

The emergency fuel pump is used only to (1) provide fuel pressure for priming prior to starting engine and (2) provide fuel pressure in case the engine-driven pump fails. The emergency pump should be off during normal flight.

2.1.2 Parachutes

Backpack style parachutes may be used by removing seat back cushions.

2.1.3 Inverted Fuel and Oil Systems

The inverted fuel system consists of a 1.5 gal. header tank in the forward cabin with a standpipe to draw fuel from the center of the tank. One-half (0.75 gals.) of the tank capacity is useable in inverted flight. The system is completely automatic; however, sufficient time (see Section 1.2.6) must be allowed between periods of continuous inverted flight to allow the header tank to refill.

The inverted oil system consist of an inverted/upright shuttle valve, an oil/air separator canister and a system of interconnecting lines. This system is completely automatic (see also Section 2.1.7).

Oil pressure may be interrupted momentarily in certain aircraft attitudes or during certain combinations of maneuvers. These interruptions are normal but should not be allowed to extend beyond 15 seconds (avoid extended right knife edge flight).

2.1.4 Rotating Beacons and Strobe Lights

Particularly at night, reflections from clouds, haze or dust can produce optical illusion and intense Vertigo. Under these conditions, rotating beacons and strobe lights should be turned off prior to entering.

2.1.5 Fuel System

The total useable fuel capacity is 40 gallons, of which approximately 20 gallons is carried in each wing tank. The wing tanks are interconnected both in the vent system and the fuel feed system, and may be considered as one tank. Fuel feeds simultaneously from both tanks and the total fuel quantity in each tank is shown by a right and left tank gauge. The gauges are marked in fractions of the total fuel (E, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, F) and reads "E" (Empty) with unusable fuel in the tanks. Fuel tank caps are not vented and must seal completely to prevent a difference in fuel level between the two tanks.

2.1.6 Alternate Air

Avoid using alternate air on the ground. With alternate air on, induction air is not filtered and abrasive dirt particles may enter the engine. In flight, use alternate air only when icing is suspected, i.e. since heat cause partial loss of power, do not use when landing unless atmospheric conditions indicate that icing is probable, because full power may be needed on a go-around.

2.1.7 Cold Weather Operation

For operational procedures related to cold weather operation consult the Lycoming Operators Manual. Due to the length of oil lines, special care should be exercised during starting to assure that engine oil pressure is obtained within 30 seconds after start.

It is recommended that the engine compartment be preheated prior to start if the ambient temperature is below 20° F.

2.1.8 Acrobatic Operation

Maneuvering speed (V_A) is maximum speed (for an established operating weight) at which full and / or abrupt use of the elevator control will not cause load factors in excess of the +6 G's in Normal Operations or -5 G's in Inverted or Outside Operations.

Full and / or abrupt movement of ailerons may be used at speeds up to V_A provided that the load factor does not exceed +4 G's or -3.2 G's. Use of ailerons above V_A or above +4 G's or -3.2 G's should be smooth and limited to deflections which will cause a roll rate not exceed that roll rate achieved with full aileron at V_A .

Caution: Full abrupt use of the ailerons with simultaneous use of full abrupt elevator at V_A may produce loads in excess of design limits.

Propeller RPM is limited to 2600 RPM maximum during acrobatic maneuvers.

For solo acrobatic operations, determine that the rear seat folding back has restrainer cables to prevent back from folding completely forward and interfering with rear stick movement. Ascertain that all loose or hanging objects, including unused seatbelts, are removed from the aircraft or are secured to prevent movement in flight.

2.1.9 Pre-Flight Check (See Page 14)

- 1)
 - a. Release controls.
 - b. Check ignition switches "OFF."
 - c. Check fuel quantity on fuel gauges.
 - d. Fuel valve "ON."
 - e. Inspect seat belt for condition.
 - *f. Secure rear seat belt, shoulder harness and all other loose or hanging objects if not in use.
 - g. Emergency locator transmitter - armed.

- 2)
 - a. Check right wing root cover for security.
 - b. Check aileron for freedom of movement and security.
 - c. Check wing & struts for general condition.

- 3)
 - a. Check right main wheel for proper inflation.
 - b. Visually check fuel quantity, then check filler cap security.
 - c. Check pitot-static tube for stoppage.
 - d. Check if pitot heat is functioning if going into known IMC.

- 4)
 - a. Check oil level and secure dip stick. Inspect engine compartment for general condition, fuel leaks, oil leaks, etc.
 - b. On first flight each day, drain fuel from gascolator.
 - c. Check that the oil dip stick access door is properly latched.
 - d. Check windshield for cleanness.
 - e. Check prop for nicks and prop spinner for security.
 - f. Check prop blade shanks for evidence of excessive bearing grease leakage.
 - g. Check air filter for cleanliness and security

- 5)
 - a. Check left main wheel for proper inflation.
 - b. Check left fuel tank quantity, and then check filler cap security.
 - c. Inspect stall warning vane for freedom.
 - d. Inspect fuel vent for stoppage.

- 6)
 - a. Check wing root cover for security.
 - b. Check aileron for freedom of movement and security.
 - c. Check wing & struts for general condition.

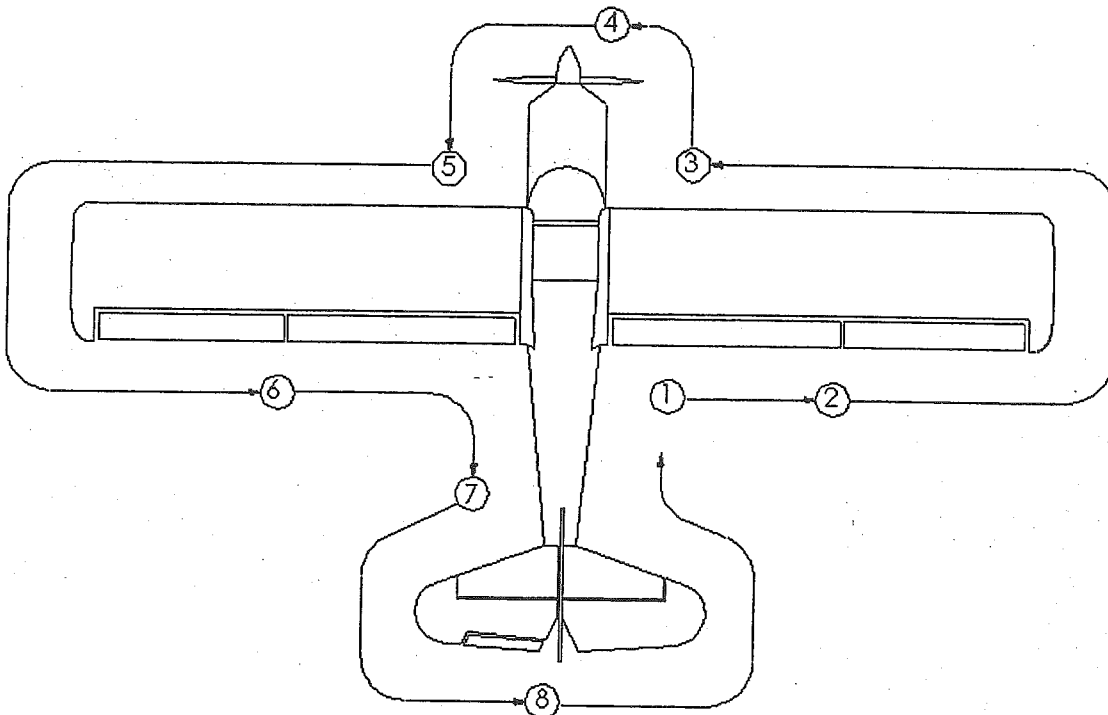
* Determine that the rear seat folding back has restraint cables to prevent back from folding completely forward and interfering with rear stick movement.

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- 7)
 - a. On first flight each day, drain fuel from aft fuselage drain.
 - b. Inspect bottom of aircraft for general condition.
 - c. Inspect right static port for stoppage.

- 8)
 - a. Check tail surfaces & brace wires for general condition.
 - b. Check control surfaces for freedom of movement and security.
 - c. Check tail wheel security and proper inflation.
 - d. Inspect left static port for stoppage.



Pre-Flight Inspection (See Page 9)

2.1.10 Pre-Start Check

- 1) Seat belts - Adjust and secure.
- 2) Fuel Valve handle - "ON".
- 3) Brakes - Test and set.
- 4) Radios and electrical equipment - "OFF".

2.1.11 Engine Start

- 1) Mixture - "Rich".
- 2) Alternate Air - cold.
- 3) Throttle cracked open.
- 4) Prime - as required.
- 5) Propeller area - clear.
- 6) Master switch - "ON".
- 7) ignition switches - "ON".
- 8) Starter button - "Start". (release when engine starts)
- 9) Oil pressure - check.

2.1.12 Cockpit Pre-Flight

- 1) Cabin door - latched.
- 2) Flight controls - Check for freedom and operation.
- 3) Trim tab - take-off setting.
- 4) Flight instruments and radios - set.

2.1.13 Engine Run-Up

- 1) Throttle setting - 1800 RPM.
- 2) Magnetos - check
(200 RPM maximum drop - 50 RPM max. differential between mags.)
- 3) Alternate Air - Check operation.
- 4) Engine instruments - within green arc.
- 5) Propeller control - Check operation. (Constant speed propeller)

2.1.14 Take-Off

- 1) Alternate Air - cold.
- 2) Throttle - full open.
- 3) Mixture full rich. (or as required by field evaluation)
- 4) Engine instruments within green arc.
- 5) Propeller control full increase - RPM (Constant speed propeller)

2.1.15 Climb (Normal)

- 1) Throttle - full open.
- 2) Mixture - rich or leaned as required.
- 3) Engine instruments - within green arc.
- 4) Climb speed - Best rate of climb.

2.1.16 Cruising

- 1) Power - as desired. (2550 RPM max.)
- 2) Elevator Trim - adjust.
- 3) Mixture - Lean to best power with 75% power or less.
- 4) Engine instruments - within green arc.
- 5) Alternate Air - as required.

2.1.17 Landing Check-List

- 1) Mixture - rich.
- 2) Alternate Air - check operation and return to cold.
(Unless icing conditions exist.)
- 3) Propeller control - full increase RPM.
- 4) Airspeed - 75-80 mph.

2.1.18 Balked Landing (Go Around)

- 1) Throttle - full open.
- 2) Alternate Air - cold.
- 3) Airspeed 75 mph.
- 4) Trim - Re-Set.

2.1.19 After Landing

- 1) Alternate Air - cold.

2.1.20 Shut Down and Securing Aircraft

- 1) Parking - into the wind if possible.
- 2) Park Brake - set.
- 3) Radios and electrical equipment - "OFF".
- 4) Mixture - idle cut-off (Pulled full out).
- 5) Ignition and master switches - "OFF".
- 6) Control lock - secure seat belt around front control stick.
- 7) Flaps - full down.

2.1.21 Noise Characteristics

The noise level for this airplane measured in accordance with FAR 36, Appendix G at full throttle, 2700 RPM.	All Propellers: 76.79 dBA
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No determination has been made by the Federal Aviation Administration that the noise levels of this airplane are or should be acceptable or unacceptable for operation at, into, or out of, any airport

2.2 Emergency Procedures

2.2.1 Engine Restart

Caution: If propeller ceases to turn, diving will not cause windmilling.

Fuel starvation may occur after a series of inverted maneuvers since the header tank may have had insufficient time to refill. (See section 1.2.6)

Check:

- 1) Assume ERECT Flight Attitude
- 2) Throttle – $\frac{3}{4}$ Forward
- 3) Mixture – Full Forward
- 4) Propeller – Full Forward
- 5) Fuel Valve – On
- 6) Emergency Fuel Pump – On
- 7) Magnetos – On
- 8) Master – On
- 9) Starter – Engage if Windmill RPM is Insufficient

2.2.2 Alternate Air

If induction ice is indicated (gradual decrease in manifold pressure), use full alternate air until all ice is dissipated.

2.2.3 Fuel Pressure Loss

For fuel pressure loss or fluctuation, turn "ON" the Emergency Fuel Pump.

2.2.4 Engine Fire (Ground)

- 1) Mixture - idle cut-off.
- 2) Fuel valve off.
- 3) Master & magneto switches - OFF.
- 4) Cabin heater off.
- 5) Extinguish with fire extinguisher.

2.2.5 Engine Fire (In Flight)

- 1) Fuel valve - OFF.
- 2) Master switch - OFF.
- 3) Cabin heaters - OFF.
- 4) Accomplish emergency landing and evacuate aircraft.

2.2.6 Electrical System Malfunction / Fire

The ammeter indicates current to or from the battery.

A steady discharge on the ammeter indicates an inoperative alternator system. Turn off unnecessary electrical equipment to reduce battery drain. Master switch may be turned off to conserve battery power if necessary.

Indication of electrical fire(s) may be wisps of smoke or the smell of hot or burning insulation. Should an electrical fire develop, the following procedures are recommended:

- 1) Master switch "OFF".
- 2) All electrical switches "OFF".
- 3) Open air vents or windows **ONLY** if absolutely necessary for ventilation.
- 4) Proceed to the nearest suitable airport for landing.

If electrical power is necessary for safety of flight under the above conditions, the following procedures are recommended:

- 1) Disengage and isolate each power circuit.
- 2) Engage each circuit separately. Allow sufficient time to analyze for faulty operation.
- 3) When faulty circuit is identified, disengage faulty circuit.
- 4) Properly functioning circuits may be re-engaged.
- 5) Land as soon as practicable for repairs.

2.2.7 Emergency Exits

The right cabin door can be removed by releasing the upper window latches and pulling the safety pin and then pulling upon the red emergency door release handle and pushing door away from aircraft. If necessary, exit may be made from left side of aircraft by opening left window. Force forward portion of window past its hinge stops by pushing out on forward window frame.