AMERICAN CHAMPION AIRCRAFT
CORPORATION

"Dedicated to Preserving a Classic"

PILOT'S OPERATING MANUAL

FOR

MODEL 8KCAB

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: N157WB

SERIAL NUMBER: 1139-2014

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 date 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: Joseph Mass
For: Royce Prathers
Manager, Chicago Aircraft Certification Office

Date: 2 5 NOV 2003

FAA APPROVED
Page 2 of 19
Revision: H
Issued: NOV 2 5 2003

Record of Revisions

Revision Number	By	Description	Date	Pages Affected
G	JKM	Retyped Manual; Added Heated Pitot Limitations; Noise Levels to FAR 36, Append. G; Added two and three bladed MT Composite Propellers; Changed Revision Block	11-22-02	All
H	JKM	Changed Normal Category Gross Weight Operation to 1950 lbs.	10-21-03	1, 2, 5-9, 16-19

FAA APPROVED
Page 3 of 19
Revision: H
Issued: NOV 2 5 2003

Table of Contents

Table of Contents (continued)

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"

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

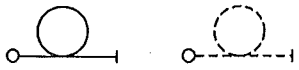
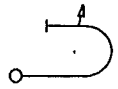
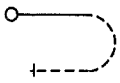
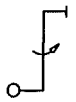
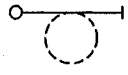
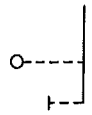
Any fuel remaining in the tanks when fuel gauge reads "E" (Empty) cannot be safely used in flight.

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.

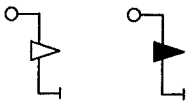
1.2.7 Maneuvers

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 Not 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, ¼, ½, ¾, 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 VA 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 know 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

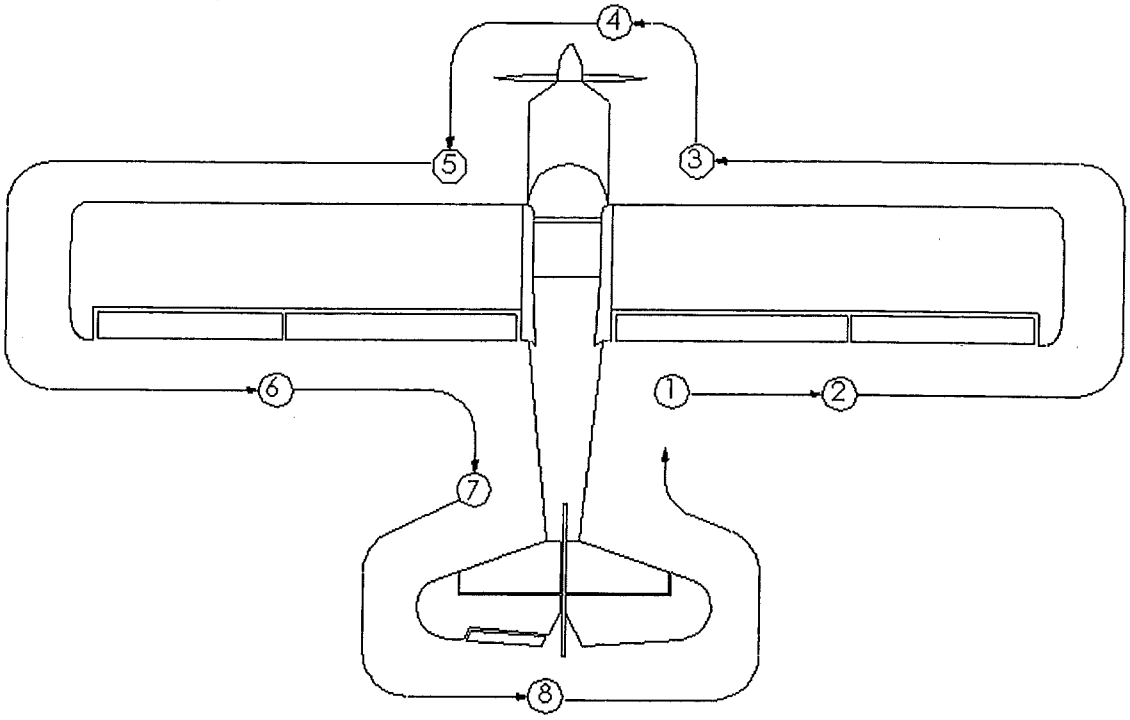
5) a. Check left main wheel for proper inflation.
   b. Check left fuel tank quantity, and then check filler cap security.
   c. Inspect stall warning vane for freedom.
   d. Inspect fuel vent for stoppage.

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 restrainer cables to prevent back from folding completely forward and interfering with rear stick movement.

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

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 – ¾ 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 file 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.

ACAC – Addendum

Model 8KCAB with

Lycoming Engine AEIO-360-H1B (180 HP)

Record of Revisions

LET	By	Description	Date	Pages Affected
A	JJB	Retyped Addendum, Updated for 1950 lbs Gross Weight	10-23-03	All

3.0 PERFORMANCE INFORMATION

3.1 CLIMB SPEEDS

Best Rate-of-Climb Speed at Sea Level: 82 MPH (71 Knots) CAS
Best Angle-of-Climb Speed at Sea Level: 58 MPH (50 Knots) CAS

Best Rate-of-Climb Speed Decreases 1 MPH per 2000ft Gain of Pressure Altitude.
Best Angle of Climb Speed Increases 1 MPH per 1500ft Gain of Pressure Altitude.

3.2 SERVICE CEILING

Service Ceiling: 16000 ft

3.3 AIRSPEED SYSTEM CALIBRATION

Indicated airspeed (IAS) is identical to calibrated airspeed (CAS) from stall up to 140 MPH. From this speed the following calibration exists.

IAS (MPH)	CAS (MPH)
140	139
150	148
160	158
170	167
180	185
200	194

4.0 LOADING INFORMATION

Weight and balance data is prepared individually for each airplane. Procedures used in this section have been approved by the FAA.

ACAC Addendum Page 3 shows the moment and loading envelope diagrams applicable to the 8KCAB. A weight and balance report containing the airplane empty weight, moment, and the approved equipment list is attached to this manual. These items are explained below.

4.1 MOMENT AND LOADING

The loading envelope shows the allowable limits of the total airplane moment from the minimum weight to the maximum gross weight. The moment diagram gives the moment contribution of the pilot, passenger, fuel, oil, and baggage. To find the moment contribution of a 100lb passenger, move vertically upward along the weight scale to 100lbs., move horizontally to the passenger line, the moment contribution is read vertically downward from this point, i.e. 4000 in-lbs.

To determine if a particular weight configuration is acceptable, find the total weight and the total moment by summing the contributions of each component, including the empty airplane (oil moment is negative and must be subtracted). On the loading diagram, locate the intersection to the horizontal total weight line and the vertical total moment line. If this intersection lies within the envelope, the configuration is acceptable.
(ACAC Addendum Page 4)

Note the distinction of normal and acrobatic category areas. Acrobatic category operations are prohibited outside of the acrobatic category envelope and at total weights above 1800 lbs. Reference section 1.2 of the aircraft flight manual for aerobatic category limitation.

4.2 WEIGHT AND BALANCE

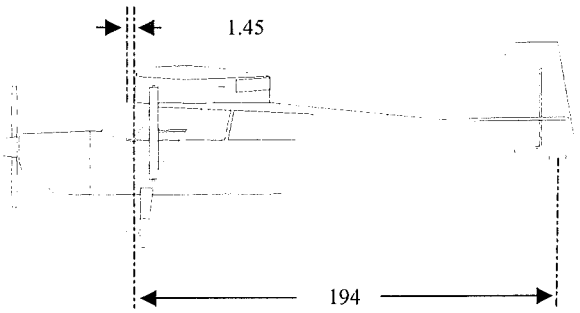
The weight and balance report give the official aircraft empty weight, empty moment, empty CG, and useful load. The empty weight includes unusable fuel and undrainable oil. (ACAC Addendum Page 3)

4.3 EQUIPMENT

Each item installed on the airplane at the time of weighting is marked with and X on the equipment list. The weight and moment are of each item are also shown. The accelerometer is required for acrobatic category operation only. (ACAC Addendum Pages 5-9)

AMERICAN CHAMPION AIRCRAFT CORPORATION
ROCHESTER, WISCONSIN 53167

WEIGHT AND BALANCE WORKSHEET



Model Number **8KCAB (180 HP/CS Prop)**
Serial Number: 1139-2014
Identification Number: N157WB
Date: 3/12/2014
Signed:

Aircraft Leveling Means: Drop plumb line from wing leading edge so that it is 12.18 inches forward of front face fuselage wing strut fitting.

Weight Actual: 1297

1.	Left Wheel Weight:	619 lbs.	Right Wheel Weight:	612 lbs.
2.	Tail Wheel Weight	66 lbs.		
3.	Total Aircraft Weight (Full Oil):	1297 lbs.		

C.G. = (194 in. x 66 lbs.) / 1297 lbs. + 1.45 in. = 11.31 in Aft L.E.

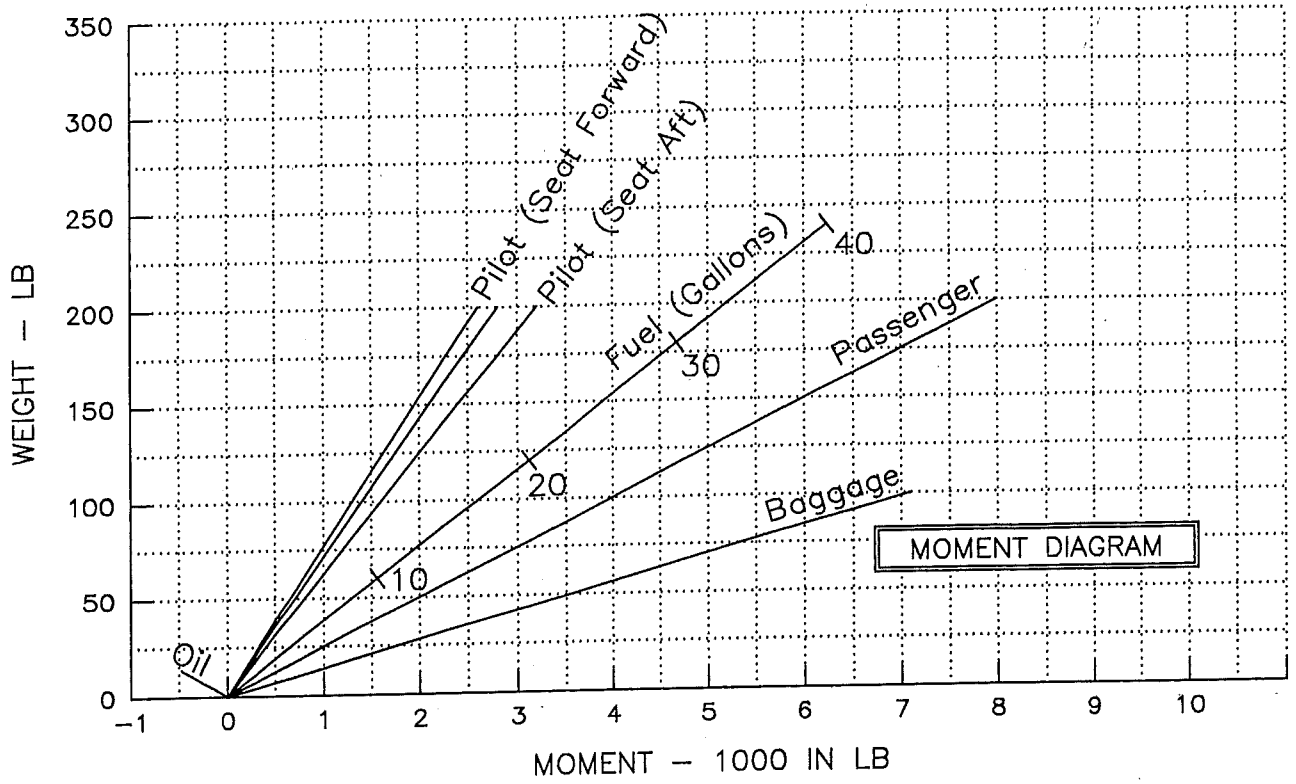
	WEIGHT (lbs.)	ARM (in.)	MOMENT (in. lbs.)
Aircraft Weight with Full Oil	1297	11.31	14669.07
Subtract Drainable Oil (of 19 lbs, 5 lbs. is undrainable)	-14	-34	+476
Add 0.75 Gallons Unuseable Fuel (Header Tank)	+4.5	-13	-58.5
Add 2.25 Gallons Unuseable Fuel (Wing Fuel Tanks)	+13.5	+26	+351
TOTALS	1301	XXXXX	15437.57

Aircraft Empty C.G. 11.87 in. aft datum
Normal Category Useful Load 649 lbs.
Acrobatic Category Useful Load 499 lbs.

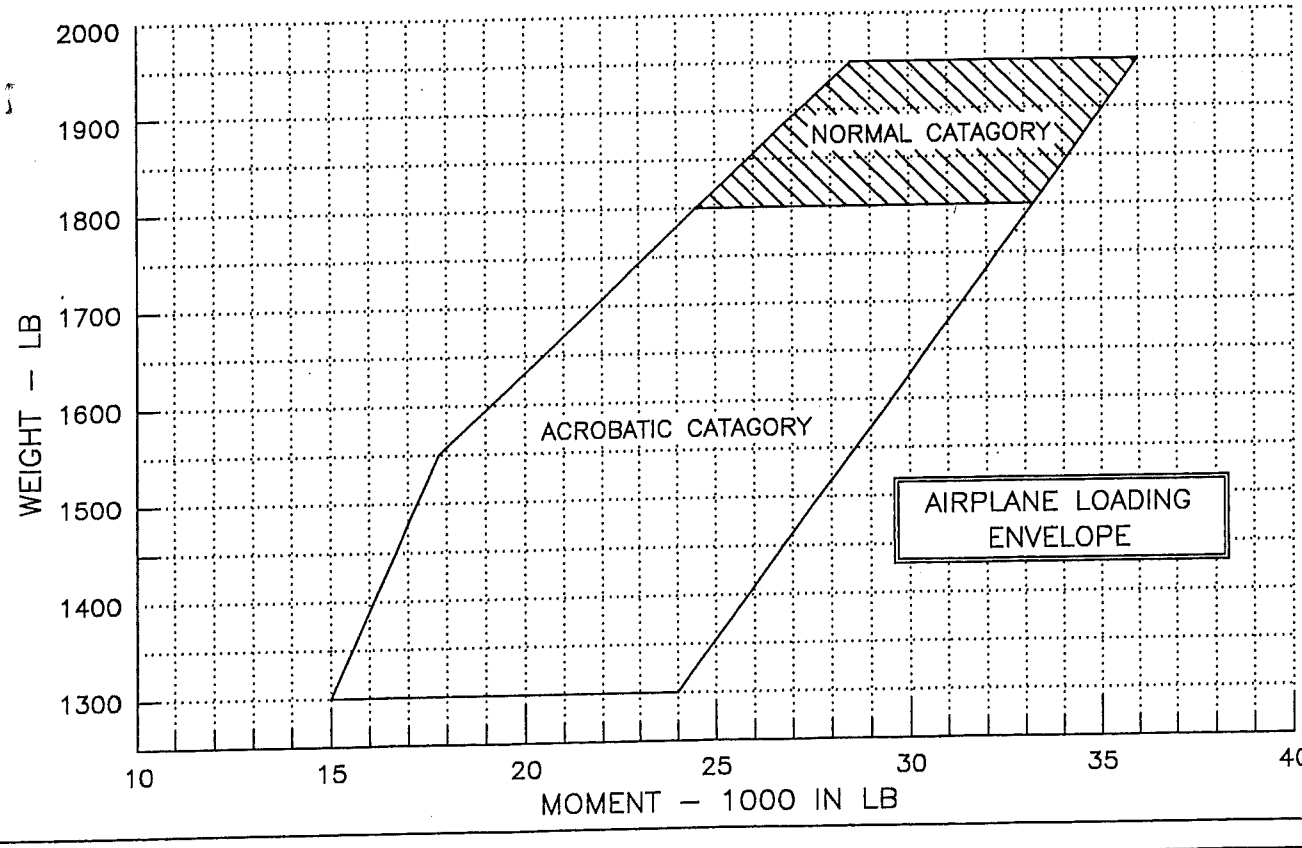
Datum: Wing Leading Edge

CENTER OF GRAVITY LIMITS:
NORMAL CATEGORY (+ 14.7 in.) To (+ 18.5 in.) At 1950 lbs.
ACROBATIC CATEGORY (+ 13.5 in.) To (+ 18.5 in.) At 1800 lbs.
(+ 11.5 in.) To (+ 18.5 in.) At 1550 lbs. or less
Straight line variation between points given.

LOADING SCHEDULE 8KCAB (180 HP/CS PROP)



Add weights and moments of items in MOMENT DIAGRAM to airplane empty weight and moment. (negative oil moment) Locate intersection of total weight and moment on AIRPLANE LOADING ENVELOPE. Any point within the envelope meets all balance requirements.



5 EQUIPMENT LIST

Suffix Letters on Item Numbers:

R: Required for FAA Certification

S: Standard Equipment

A: Optional Equipment Not Required

O: Optional Equipment Replacing Standard or Required Item

ITEM NO.	X	DESCRIPTION	DRAWING	WT, LB	ARM, IN
1R	X	Engine, Lycoming AEIO-360-H1B	7-1502	301.00	-38.36
2O		Propeller, Hartzell HC-C2YR-4CFFC7666A-2	4-2010-1	62.00	-57.50
3O	X	Propeller, MT 2-Blade MTV-15-B-C/C188-34 (w/Spinner)	4-2010-4	52.00	-57.50
4O		Propeller, MT 3-Blade MTV-9-B-C/C188-18b (w/Spinner)	4-2010-5	66.00	-57.50
5S		Spinner, Hartzell 836-52	4-2010	4.63	-58.83
6R	X	Propeller Governor	4-2010	2.50	-22.00
7R	X	Control, Propeller Governor	4-2010	2.50	-5.00
8R	X	Pump, Emergency Fuel	7-1502	2.00	-23.40
9R	X	Oil Cooler	7-1502	2.95	-27.18
10R	X	Filter, Injector Air	7-1517	0.50	-43.00
11R		Tachometer, Reading	7-1524	0.66	-3.40
12R		Gauge, Combination Manifold/Fuel Pressure	7-1524	1.19	-6.69
13R	X	Altimeter—Sensitive	7-1524	0.50	-3.30
14R	X	Indicator, Airspeed	7-1524	0.50	-3.00
15A		Rate of Climb	7-1524	0.50	-3.00
16A		Turn & Bank (Needle Ball)	7-1524	2.00	-3.00
17A		Turn Coordinator	7-1524	1.00	-3.00
18A		Artificial Horizon RC Allen 2600-3	7-1125	0.65	-3.00
19A		Directional Gyro	7-1125	2.63	-3.00
20A		Suction Gauge	7-1125	.0.22	-3.00
21A		Vacuum Pump	7-1125	2.81	-3.00

ITEM #	X	DESCRIPTION	DWG	WT, LB	ARM, IN
22R	X	Accelerometer	7-1524	0.50	-3.00
23R		Gauge, Oil Temperature	7-1524	0.57	-13.00
24R		Gauge, Oil Pressure	7-1524	0.35	-2.80
25R		Gauge, Ammeter	7-1524	0.26	-3.00
26A	X	Engine Hour Meter	3-1354	0.80	-3.00
27A		Clock, Davtron	7-1524	0.25	-3.00
28A		Outside Air Temperature Gauge	7-1415	0.17	-8.00
29R	X	Compass, Airpath	4-1736	0.77	-4.00
30O		Compass, Vertical Card	4-1736	0.77	-4.00
31A		Cylinder Head Temperature Gauge	CI-1	1.29	-3.00
32A		Carburetor Air Temperature Gauge	CI-1	1.29	-3.00
33A		Exhaust Gas Temperature Gauge	CI-1	0.50	-5.00
34A		Electronics International Smartscan SR-8	CI-1	2.00	-5.00
35A		Electronics International EAC-1 CHT/EGT/OAT	CI-1	1.00	-5.00
36R	X	Stall Warning	4-1401	0.85	-1.74
37O	X	Starter, Skytech	7-1502	8.00	-44.44
38R	X	Alternator	7-1502	10.63	-48.36
39R	X	Voltage Regulator	7-1502	0.50	-22.40
40R	X	Battery Installation —RG25 Concorde	4-1782	27.50	86.00
41A	X	Cabin Light	7-1524	0.57	24.00
42R		Tail Light	7-1487	0.41	202.80
43R	X	Landing Light	7-1517	0.47	-52.32
44R	X	Wing Tip Strobe	3-1517	2.5	17.62
45R	X	Position Lights--Wing	3-1512	0.50	17.62
46R	X	Brake Cylinder, Grove PN 6750-5	4-1624	1.00	-19.63
47A	X	Wheel Pants	4-1474	10.00	2.00
48R	X	Wheel & Brake, GROVE (both sides)	7-1307	13.94	2.44

ITEM #	X	DESCRIPTION	DWG	WT, LB	ARM, IN
49R	X	Tire & Tube, 6.00x6x4 Ply Type III (both sides)	7-1307	18.50	2.44
50R		Tailwheel—Scott 3200	4-1080	7.80	193.33
51O	X	Tailwheel – Alaskan Bushwheel 3200A	4-1080	8.00	193.33
52R	X	Seat Installation, Front Adjustable	7-1499	15.63	17.25
53R	X	Seat Installation, Rear	4-1708	13.63	48.63
54O		Seat Installation, Wide Rear	4-1709	18.44	48.63
55A		Rear Heat	7-1478	2.25	-6.55
56R	X	Hooker Harness, Front (Standard belt)	7-1499	2.50	18.25
57R	X	Hooker Harness, Rear (Standard belt)	4-1708	2.50	47.63
58O		Hooker Harness, Front (Competition)	3-1660	7.50	18.25
59O		Hooker Harness, Rear (Competition)	3-1660	7.00	47.63
60R	X	Cargo Net	3-1475	0.50	62.00
61A	X	Cabin Speaker	7-1415	1.36	35.00
62A	X	Microphone Telex Tel-66T Front	2-2078	0.38	11.00
63A		Glider Tow	7-1143	4.00	111.00
64A		Landing Gear Steps L/R	3-1559	1.50	2.00
65A		Fire Extinguisher	7-1415	5.38	-5.30
66A	X	Seaplane Corrosion Proofing	CFP-2	5.00	92.00
67A	X	Remote Oil Filter--Airwolf	4-2026	4.00	-24.00
68A		Aileron Spades	3-1669	2.25	46.00
69A		Speed Fairings	4-2025	1.00	12.18
70A		External Battery Charger	3-1694	0.25	23.40
71A		Power Receptical	4-2043	0.25	-5.00
72A		Tanis Heater	7-1502	1.60	-41.22
73A	X	Antenna, Transponder		0.50	-3.00
74A		Antenna, Broad Band (Com #1 / GPS)	4-1631	1.00	92.00
75A		Antenna, Broad Band (Com #1)	4-1631	0.50	92.00

ITEM #	X	DESCRIPTION	DWG	WT, LB	ARM, IN
76A	X	Antenna, Broad Band (2nd Com)		0.50	64.00
77A		Antenna, Nav Meridan OD-1	3-1542	1.50	101.00
78A		Antenna, GPS		0.50	9.50
79A		Antenna, Marker Beacon		050	-3.00
80A	X	Encoder—Sandia SAE5-35	4-2036	0.70	-5.00
81A		ELT—ACK E-01	3-1689	3.30	68.38
82A	X	ELT – AmeriKing	3-1689	3.00	68.38
83A		Flitecom 403 Intercom	7-1524	1.00	-5.00
84A	X	PSE PM3000 Intercom	7-1524	1.00	-5.00
85A		Intervox Nat Intercom	7-1524	1.90	-5.00
86A		Garmin GMA340	4-2036	1.70	-5.00
87A		King KX155 Nav/Com	4-2036	5.30	-5.00
88A		King KY 97A Com	4-2036	2.82	-5.00
89A		King KT 76A Transponder	4-2036	2.00	-5.00
90A		King KLX 135A GPS/Comm	4-2036	5.00	-5.00
91A		King KI 208 Nav Head	4-2036	1.00	-5.00
92A		King KI 209 Nav Head	4-2036	1.00	-5.00
93A		King KMD 150 GPS	4-2036		-5.00
94A		Garmin GNC 250XL GPS/Comm	4-2036	3.18	-5.00
95A		Garmin GNS 430 GPS/Comm/Nav	4-2036	4.00	-5.00
96A		Garmin GI 106A Nav Head	4-2036	1.00	-5.00
97A		Garmin GDL88		1.50	-5.00
98A		Garmin GTX 330 Transponder	4-2036	3.00	-5.00
99A	X	Garmin GTR225 VHF Comm	4-2036	3.46	-5.00
100A	X	Garmin GTX 327 Transponder	4-2036	3.00	-5.00
101A		Electronics International FP-5 Fuel Flow / Pressure	CI-1	1.30	-5.00

ITEM #	X	DESCRIPTION	DWG	WT, LB	ARM, IN
102O		Electronics International M-1 Manifold Pressure	CI-1	1.00	-5.00
103O		Electronics International OPT-1 Oil Pressure / Temp	CI-1	1.50	-5.00
103O		Electronics International VA-1A Volts / Amps	CI-1	1.50	-5.00
104O		Electronics International R-1 Tachometer	CI-1	1.50	-5.00
105O		Electronics International US-8A Ultimate Engine Analyzer	CI-1	2.50	-5.00
106A		Electronics International ASC-5A Altitude Alert / Super Clock	CI-1	1.00	-5.00
107A	X	Rear Baggage Door	3-1717	5.50	75.00
108O	X	Aluminum Main Landing Gear	7-1559	30.00	0.0
109S		Steel Main Landing Gear	7-1307	42.00	0.0
110A		Lo-Voltage Warning Light	2-2317	0.25	-5.00
111A	X	Air Gizmos Mounting Rack	4-2036	0.20	-5.00
112A		Micro Dynamics VG's		1.00	2.00
113A		PSE PCD 7100-1 INTERCOM	CA-1	2.20	-5.00
114O	X	EDM-930 Engine Data Management System	7-1580	3.00	-5.00
115O		GARMIN GDL 69 XM	CI-1	2.69	-5.00
116O		ASPEN EFD1000		2.90	-3.30
1170		ASPEN RSM		0.20	31.4
118O		Tachometer/Manifold Pressure MT200K		0.45	-5.00
119O		Oil temp/Pressure OPT200K		0.45	-5.00
120O		Fuel Pressure/Ammeter FA200K		0.45	-5.00
121O		EGT/CHT ECT204P3PB		0.45	-5.00
122O		Fuel Flow FF200K30		0.45	-5.00
123O		OAT/Clock CO200K		0.45	-5.00

American Champion Aircraft Corp.
Rochester, Wisconsin

FAA Approved

Airplane Flight Manual Supplement

Models 7ECA, 7GCAA, 7GCBC, 8KCAB and 8GCBC equipped with:

EDM - 930
Engine Data Management Unit

This Flight Manual Supplement applies only for models:
7ECA, 7GCAA, 7GCBC, 8KCAB and 8GCBC equipped with J.P. Instruments model EDM - 930 Engine Data Management System installed per 7-1580.

Model: 8KCAB

Registration Number: N157WB

Serial Number: 1139-2014

This manual is part of the required equipment and must remain in the airplane at all times.

Approved: Joseph Chmura Date: 26 MAY 2006
For: Royace Prather
Manager, Chicago Aircraft Certification Office

Revisions:

Letter	By	Date	Revisions	Pages Affected
Original	JKM	5 / 19 / 2006	Original Issue.	All

I. GENERAL

The EDM-930 is a combined electronic indicating system which simultaneously displays to the pilot powerplant and aircraft systems operating parameters. It includes the following indicating systems; replacing all previous primary digital and/or analog instruments
(The label of the parameter shown on the instrument is indicated in the first parenthesis);
(The acronym shown in the alarm displays is shown in the second parenthesis):

1. Engine rotational speed (RPM) (RPM)
2. Engine Manifold Pressure (MANIFOLD PRESSURE) (MAP)
3. Engine Cylinder Head Temperature (CHT) (CHT)
4. Engine Exhaust Gas Temperature (EGT) (EGT)
5. Engine Oil Temperature(OIL-T) (O-T)
6. Engine Oil Pressure (OIL-P) (O-P)
7. Fuel Pressure(FUEL-P) (F-P)
8. Fuel Flow (FUEL FLW) (FF)
9. Fuel Quantity (FUEL QTY) (None)
10. Fuel Remaining (FUEL REM) (REM)
11. Alternator/Generator Output – Volts (VOLTS) (BUS) and Amps (AMPS) (AMP).
12. Outside Air Temperature (OAT) (None)

Display

The right hand side of the EDM-930 display has 9 vertical scale columns with a digital value below each column. The nine functions are: OIL-T, OIL-P, FUEL-P (8KCAB only; FUEL REM on other models), OAT, VOLTS, AMPS, FF, and two FUEL QTY indicators (LEFT and RIGHT). The engine RPM and MAP are presented in the upper left corner of the instrument.

The EGT and CHT are presented in the lower left corner. Below the EGT/CHT columns is a message center that displays the digital values of the EGT/CHT and additional functions like shock cooling and caution and limit alarm messages. Specific values for each parameter are displayed digitally above the vertical scale displays of EGT and CHT. The highlighted indicator below the columns indicates which cylinder's digital information is presented.

Programming

Depressing the LF and STEP buttons simultaneously enters the program mode to enter fuel quantities, display scan rate, OAT display to °F or °C, EGT digital display resolution to 1 or 10° and other setup parameters. Exit by depressing STEP. If either the STEP or LF buttons are not pushed for three minutes, the EDM-930 will revert to automatic scan mode. Depressing the STEP button will stop the automatic mode and revert to manual mode. Refer to the EDM-930 Pilot's Guide Rev. B or later for additional operating information.

Remote Alarm Display (RAD)

The RAD is a 8 character independent display. The RAD will still function if the main display is inoperable. An alarm such as the CHT on cylinder number 2 is 480 is displayed as 480CHT2. The label CHT2 will flash whenever an over-temperature exists and will extinguish when the temperature falls below the limit temperature. Other alarms would be displayed as, for example: 2780 RPM, 15 O-P, 50 F-P, 250 O-T.

The RAD is mounted on the instrument panel directly above the primary display and displays digital caution and limit excedances when any of the parameters has reached its preset trigger point. Whenever limit alarms are not triggered, the RAD continuously displays MAP and RPM. On initial startup or whenever power is turned on, the words "EDM-930 PRIMARY" is displayed, followed by the make and model of the aircraft for which the primary limits are set.

Alarm Limits

Whenever a parameter reaches the programmed caution trigger point, the main display will flash the amber colored word ALERT and the parameter acronym. Tapping the STEP button extinguishes these warnings. Similarly, whenever a parameter reaches a programmed limit value, the display will flash the red colored word ALERT and the acronym. Also, the RAD will flash the value and acronym. Tapping the STEP button will extinguish the red display warnings on the main display but the RAD will continue to flash the value and acronym until the parameter is not at or beyond the limit value. If another parameter has also reached its limit, that label will then begin to flash. The pilot should continue to monitor the affected functions as he would if a conventional analog display had reached a limit.

Dimming

Automatic dimming is provided to dim both the panel display and the remote alarm display. Dimming can also be accomplished manually. Tapping the far right hand button (labeled Brightness) decreases brightness. Continuously holding this button increases brightness. Manual dimming overrides the automatic dimming feature. When switching electrical power off and on, the system defaults to automatic dimming.

II. OPERATING LIMITATIONS

a. The EDM-930 replaces standard RPM, MAP, EGT, CHT, O-T. O-P, F-P, FF, and Fuel Quantity indicators. Limitations and ranges for these functions correspond to the Airplane Flight Manual, and are to be adhered to in the same way.
b. The EDM-930 cannot be used as primary if the RAD is not working.
c. Fuel Remaining is based upon accurate entry of fuel quantity and the fuel flow. Do not rely on fuel flow instrument to determine fuel level in tanks.
d. Non-primary features: Fuel Required, MPG, and Endurance will not function without a serial data compatible interconnected GPS.

III. EMERGENCY PROCEDURES

A. Loss of individual display element:
   1. Continue normal engine operation by referring to the remaining parameters displayed.

B. Loss of all display elements:
   1. Avoid high engine power settings and rapid power changes;
   2. Enrichen Mixture to maintain smooth engine operation;
   3. Arrange to terminate the flight safely and as soon as practicable.

IV. NORMAL PROCEDURES

A. PRIMARY FUNCTION

Before each flight, verify that the RAD is working. Whenever main electrical power is turned on the EDM-930 performs a self-test procedure which identifies by the message center any inoperative parameters. During engine start, there may be a power interruption to the EDM-930 while the starter is engaged.

B. ENGINE MIXTURE LEANING USING THE LEAN FIND MODE

After establishing desired cruise-power depress the LF button to activate the Lean Find Mode. As the mixture is leaned, one cylinder's column will begin blinking; indicating the EGT for that cylinder has peaked. Continue with the leaning procedure, enrich while monitoring EGT. Once the leaning procedure has been completed, depress the STEP button briefly to exit the Lean Find Mode and enter the Monitor Mode.

CAUTION

Do not exceed applicable engine or aircraft limitations.

American Champion Aircraft Corp.

Rochester, Wisconsin

FAA Approved

Airplane Flight Manual Supplement

Front Seat Lap Belts

This Flight Manual Supplement applies to 7ECA, 7GCAA, 7GCBC, 7KCAB, 8KCAB, and 8GCBC models.

Registration Number: N157WB

Serial Number: 1139-2014

This manual is part of the required equipment and must remain in the airplane at all times.

Approved: _____ Date: JUN 2 8 2010

For: Charles Smalley
Manager: Chicago Aircraft Certification Office

Revisions:

Letter	By	Date	Revisions	Pages Affected
Original	JJB	6-17-10	Add Lap Belt Normal Procedures	All

NORMAL PROCEDURES

Additional information has been added to the normal procedures requiring pilot inspection of the front seat lap belt prior to engine start and prior to flight.

Pre-Start Check

Seat belts - Adjust and secure

Lap belts must be taut; verify slack is not present in lap belts. Verify interference is not present between front lap belts and rear rudder pedals.

Cockpit Pre-Flight

Flight controls - Check for freedom and operation

Verify lap belts are taut. Verify interference is not present between front lap belts and rear rudder pedals.