

AMERICAN CHAMPION AIRCRAFT CORPORATION  
ROCHESTER, WI 53167

**FAA Approved**  
**Airplane Flight Manual**  
**American Champion Model 8GCBC**  
**with Lycoming Engine O-360-C1G (180 HP)**

This manual only for aircraft  
with serial numbers beginning with S/N 394-98 and up.

REGISTRATION NUMBER: \_\_\_\_\_

SERIAL NUMBER: \_\_\_\_\_

**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.

APPROVED: 

For:

Manager, Chicago Aircraft Certification Office

Date: 29 SEP 2004

Record of Revisions

<b>Revision Number</b>	<b>By</b>	<b>Description</b>	<b>Date</b>	<b>Pages Affected</b>
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## 1.0 Limitations: Compliance with this Section is Mandatory

### 1.1 Airspeed Limitations

Speed Designation	Calibrated Air Speed		Airspeed Indicator
	MPH	Knots	Marking
Maneuvering ( $V_A$ )	115	100	None
Normal Operating Range	57-130	50-113	Green Arc
Flap Operating Range	52-100	45-87	White Arc
Maximum Structural Cruising ( $V_{NO}$ )	130	113	
Caution Range	130-162	113-141	Yellow Arc
Never-Exceed ( $V_{NE}$ )	162	141	Red Radial Line

**Green Arc** extends from power-off stall speed flaps up ( $V_{SI}$ ) 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.

**White Arc** extends from full flap stall speed power off ( $V_{SF}$ ) to maximum flap speed ( $V_{FE}$ ).

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

### 1.2 Powerplant Limitations

Engine:	Lycoming O-360-C1G (Constant Speed Propeller)
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:	McCauley fixed pitch Model 1A200HFA80 Diameter limits 80" to 79". Approved pitch range 41" thru 47". Caution: "Avoid operation between 1700 and 2100 RPM during descending flight."
Propeller:	Hartzell 2-Blade Constant Speed HC-C2YR-1BF/F7666A Diameter Limits 76" to 72" Pitch Settings at 30" Station: low 12° high 29° Caution: "Avoid 2000-2250 Continuous Oper."
Propeller	Hartzell 3-Blade Constant Speed HC-C3YR-1RF/F7282 Diameter Limits 74" to 73" Pitch Settings at 30" Station: low 9.2° high 30.5° Caution: "Avoid 1950-2350 Continuous Operation Below 15 Inches Manifold Pressure"
Propeller:	MT 2-Blade Constant Speed MTV-15-B/203-58 Diameter Limits 80.25" to 79.75" Pitch Settings at 30" Station: low 7.5°±0.2° high 28°±1°

Propeller:	MT 3-Blade Constant Speed MTV-9-B/190-18a Diameter Limits 75" to 74.5" Pitch Settings at 30" Station: low 9.0°±0.2° high 28°±1°
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**Powerplant Instrument Markings**

Instrument	Markings	
Cylinder Head Temperature	Green Arc Red Radial	150°-500° F 500° F
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 (Fixed Pitch Propeller)	Green Arc Yellow Arc Green Arc Red Radial	500-1700 RPM 1700-2100 RPM 2100-2550 RPM 2700 RPM
Tachometer (2-bladed Hartzell Constant Speed Propeller)	Green Arc Red Arc Green Arc Red Radial	500-2000 RPM 2000-2250 RPM 2250-2550 RPM 2700 RPM
Tachometer (3-bladed Hartzell Constant Speed Propeller)	Green Arc Yellow Arc Green Arc Red Radial	500-1950 RPM 1950-2350 RPM 2350-2550 RPM 2700 RPM
Tachometer (3-bladed & 2-bladed MT Constant Speed Propellers)	Green Arc Red Radial	500-2700 RPM 2700 RPM
Manifold Pressure (Constant Speed Propeller)	Red Radial	29 in.

**1.3 Weight and Balance**

Maximum Gross Weight	2150 Lbs.
Center-of-Gravity Limits	(+14.2 in.) to (+19.2 in.) at 2150 lb. (+10.5 in.) to (+19.2 in.) at 1450 lb. or less Straight line variation between points given.
Datum	Wing Leading edge

Each operator must assure that the airplane is properly loaded.

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### 1.3 Powerplant Limitations

Engine	Lycoming IO-390-A1B6
Engine Operating Limits	2700 rpm (210 hp) for all operations
Oil Pressure	Minimum 25 psi, Maximum 100 psi
Fuel Pressure	Minimum 14 psi, Maximum 45 psi
Propeller	MT Propeller MTV-15-B/203-58 Diameter: 80.25in to 79.75in
Fuel Grades	100 (Green) or 100LL (Blue)
Oil Grades	Lycoming SI-1014

### 1.4 Powerplant Instrument Markings

Tachometer	Green Arc Red Radial	500-2700 rpm 2700 rpm
Oil Temperature	Green Arc Alternate Green Arc Red Radial	100°-235°F 120°-235°F 235°F
Oil Pressure	Green Arc Yellow Arc Red Radial	60-100 psi 25-60 psi 25 psi, 100 psi
Fuel Pressure	Green Arc Red Radial	14-45 psi 14 psi, 45 psi
Manifold Pressure	Red Radial	29 in-Hg

### 1.5 Miscellaneous Instrument Markings

Vacuum Gauge	Green Arc Red Radial	3.5 to 5.0 in-Hg 3.5 in-Hg, 5.0 in-Hg
Fuel Gauge (35 Gallon)	Red Radial	E (0.5 Gallon Each Tank)
Fuel Gauge (70 Gallon)	Red Radial	E (1.0 Gallon Each Side)

### 1.6 Weight Limits

Gross Weight	2150 lb
Maximum Baggage Load	100 lb (69.0 in aft of datum) Main Baggage Area
Maximum Baggage Load	30 lb (102.0 in aft of datum) Extended Baggage Area

### 1.7 Center of Gravity Limits

Center of Gravity Range	+14.2 in to +19.2 in at 2150 lb +10.5 in to +19.2 in at 1450 lb or less Straight line variation between points given
Reference Datum	Wing Leading Edge

**1.4 Flight Load Factors**

Maneuvering Load Factors at 2150 lb. Gross Weight:

Flaps Up:	Positive 3.8	Negative 1.52
Flaps Down:	Positive 2.0	

**1.5 Kinds of Operation**

Only VFR, day or night, operation are approved. If instrumentation is installed per technical drawing 7-1572, day or night IFR is approved. Flight into known icing conditions is not approved.

**1.6 Heated Pitot Operation**

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

**1.7 Placards****In Full View of Pilot:**

"MANEUVERING SPEED 115 MPH (100 KNOTS) CAS  
DEMONSTRATED CROSSWIND VELOCITY 17 MPH (15 KNOTS)"

"THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS AND MANUALS, DAY OR NIGHT VFR. SOLO FROM SEAT ONLY. ACROBATIC MANEUVERS, INCLUDING SPINS, ARE PROHIBITED. THIS AIRPLANE IS NOT APPROVED FOR FLIGHT IN ICING CONDITIONS." (Standard)

Or:

"THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE FORM OF PLACARDS, MARKINGS AND MANUALS, DAY OR NIGHT VFR OR IFR. SOLO FRONT SEAT ONLY, ACROBATIC MANEUVERS, INCLUDING SPINS, ARE PROHIBITED. THIS AIRPLANE IS NOT APPROVED FOR FLIGHT IN ICING CONDITIONS." (Optional, if Installation 7-1572 is Used)

"NO SMOKING" (When Ashtrays are Not Installed)

"SPINS PROHIBITED"

"AVOID 1700-2100 DURING DESCENT" (Fixed Pitch Propeller)

"AVOID 2000-2250 CONTINUOUS OPER." (Hartzell 2-Blade Propeller)

"AVOID 1950-2350 CONTINUOUS OPER. BELOW 15 IN. M.P." (Hartzell 3-Blade Propeller)

“THIS AIRPLANE IS EQUIPPED WITH GROUND ADJUSTABLE COWL FLAP. COWL FLAP POSITIONS: - FULL CLOSED (USE ONLY BELOW 70° OAT) - INTERMEDIATE - FULL OPEN”

“MAGNETIC COMPASS MAY DEVIATE AS MUCH AS 30° WHEN PITOT HEAT IS ON.”  
(When Pitot Heat is Installed)

“BATTERY IS INSTALLED FORWARD OF FIREWALL. AFT BALLAST MAY BE NECESSARY TO STAY WITHIN THE WEIGHT AND BALANCE ENVELOPE.” (Optional; When battery is installed per 4-2024)

**Adjacent to Fuel Gauge** (With 70 Gallon Fuel System Only)

“TO ASSURE MAXIMUM USEABLE FUEL CAPACITY (70 GALLONS). FUEL TANKS MUST BE FILLED SLOWLY DURING LAST 10 GALLONS EACH SIDE.”

**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)

**In Baggage Compartment**

“MAXIMUM BAGGAGE 100 LBS.”

**On Forward Left Side Window**

“DO NOT OPEN ABOVE 130 MPH” (Standard Window)

Or: “DO NOT OPEN ABOVE 90 MPH” (Required for Full Opening Window)

**Above Fuel Shutoff Rod**

“FUEL 35 GAL USEABLE - DOWN ON” (WITH 35 GAL. FUEL SYSTEM)

“FUEL 70 GAL USEABLE - DOWN ON” (WITH 70 GAL. FUEL SYSTEM)

**On Emergency Door Release Handle**

“EMERGENCY DOOR RELEASE – PULL PIN, PULL HANDLE”

**Top Half Cabin Door - FWD.**

“DO NOT EXCEED 90 MPH WITH DOOR OPEN.”

**Adjacent to Strobe Light Switch**

“TURN OFF STROBE LIGHTS WHEN TAXIING IN VICINITY OF OTHER AIRCRAFT OR DURING FLIGHT THROUGH CLOUD, FOG, OR HAZE. STANDARD POSITION LIGHTS TO BE ON FOR ALL NIGHT OPERATIONS.”

## 2.0 Normal Procedures

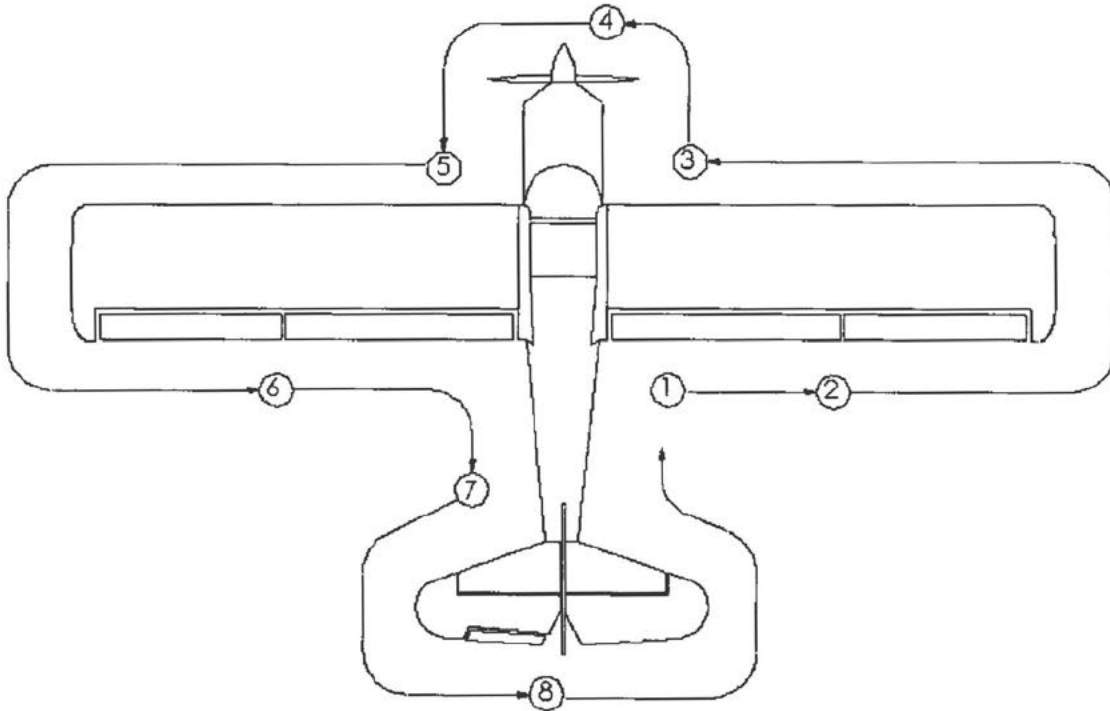
### 2.1 Pre-Flight Check (See Page 10)

- 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 and shoulder harness if not in use.
  - g. Emergency locator transmitter - armed.
  
- 2)
  - a. Check right wing root cover for security.
  - b. Check flaps for freedom of movement and security.
  - c. Check aileron for freedom of movement and security.
  - d. 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 windshield for cleanness.
  - d. Check prop for nicks and prop spinner for security and blade shank for oil leaks. (Constant speed propeller).
  - e. Check air filter for cleanliness and security.
  - f. Check that the oil dip stick access door is properly latched.
  
- 5)
  - a. Check left main wheel for proper inflation.
  - b. Check left fuel tank quantity, 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 flap for freedom of movement and security.
  - d. 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.

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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.
  
- 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.



**Pre-Flight Inspection (See Page 9)**

**2.2 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".

### 2.3 Engine Start

- 1) Mixture - "Rich".
- 2) Carburetor 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.

### 2.4 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.

### 2.5 Engine Run-Up

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

### 2.6 Take-Off

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

### 2.7 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.

## 2.8 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) Carburetor heat - as required.

## 2.9 Landing Check-List

- 1) Mixture - rich.
- 2) Carburetor heat - check operation and return to cold.  
(Unless icing conditions exist.)
- 3) Propeller control - full increase RPM.
- 4) Airspeed - 75-80 mph.
- 5) Flaps - as desired. (Below 100 mph)

## 2.10 Balked Landing (Go Around)

- 1) Throttle - full open.
- 2) Carburetor heat - cold.
- 3) Airspeed 75 mph.
- 4) Flaps "UP".
- 5) Trim - Re-Set.

## 2.11 After Landing

- 1) Carburetor heat - cold.
- 2) Flaps - "UP".

## 2.12 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.

### 2.13 Noise Characteristics

The noise level for this airplane measured in accordance with FAR 36, Appendix F at full throttle, 2550 RPM.	McCauley Propeller	73.0 dBA
	2-Blade Hartzell Prop:	73.0 dBA
	3-Blade Hartzell Prop:	73.0 dBA
The noise level for this airplane measured in accordance with FAR 36, Appendix G at full throttle, 2700 RPM.	2-Blade MT Propeller:	82.91 dBA
	3-Blade MT Propeller:	79.15 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

## 3.0 Emergency Procedures

### 3.1 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.

### 3.2 Engine Fire (In Flight)

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

### 3.3 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.

### 3.3 Electrical System Malfunction / Fire (Continued)

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.

### 3.4 Emergency Exits

The right lower 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.

### 3.5 Spin Recovery

Spins are not approved. If a spin is inadvertently entered, immediate recovery should be initiated. The recovery procedure is as follows:

- 1) Throttle to idle.
- 2) Apply full opposite rudder and simultaneously apply nose down elevator to break the stall.
- 3) Neutralize ailerons.
- 4) When rotation stops, neutralize rudder & elevator and bring nose up smoothly.

### 3.6 Propeller Governor Failure

Decrease airspeed and reduce throttle to maintain RPM below 2700 RPM.

## **4.0 Loss of Altitude in a Stall**

### **4.1 Power-Off Stalls**

The loss of altitude during the recovery from a throttle closed stall may be as much as 200 ft.

### **4.2 Power-On Stalls**

The loss of altitude during the recovery from a power on stall may be as much as 150 ft.

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The following performance data for the Model 8GCBC is not part of the FAA approved section.

5.0 PERFORMANCE INFORMATION

5.1 CLIMB SPEED 2150 LBS. GROSS WEIGHT FLAPS UP

BEST RATE-OF-CLIMB AT SEA LEVEL: 80 MPH (70 knots) CAS

(Fixed pitch propeller)

BEST RATE-OF-CLIMB AT SEA LEVEL 76 MPH (66 knots) CAS

(Constant speed propeller)

5.2 SERVICE CEILING (R/C = 100 FPM) 2150 LBS. GROSS WEIGHT FLAPS UP

Service ceiling: 14,500 ft.

5.3 STALL SPEEDS

Stall speeds at 2150 lb. gross, throttle closed, wings level

<u>FLAPS</u>	<u>STALL SPEED (CAS)</u>
0	57 mph (50 knots)
27	52 mph (45 knots)

5.4 AIRSPEED CORRECTION

<u>FLAPS UP</u>		<u>FLAPS DOWN (27 DEG.)</u>	
<u>MPH</u>	<u>IAS</u>	<u>MPH</u>	<u>IAS</u>
50	54	50	56
60	63	60	65
70	70	70	73
80	80	80	81
91	90	90	90
100	99	101	100
110	107		
120	117		
130	126		
140	136		
150	146		
162	158		

AIRPLANE FLIGHT MANUAL - CHAMPION MODEL 8GCBC

6. LOADING INFORMATION

Weight and balance data is prepared individually for each airplane.

ACAC Addendum Page 4 show the moment diagram and loading envelope applicable to the Model 8GCBC. A weight and balance report containing the airplane empty weight and moment and the approved equipment list is attached to this manual. These are explained below.

6.1 MOMENT AND LOADING

The airplane loading envelope shows the allowable limits of total airplane moment from minimum weight to 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 200-lb. passenger, for instance, move up vertically along the weight scale to 200 lb., and proceed as shown by the dotted line on page 4 to obtain the moment of 8600 in. lbs.

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

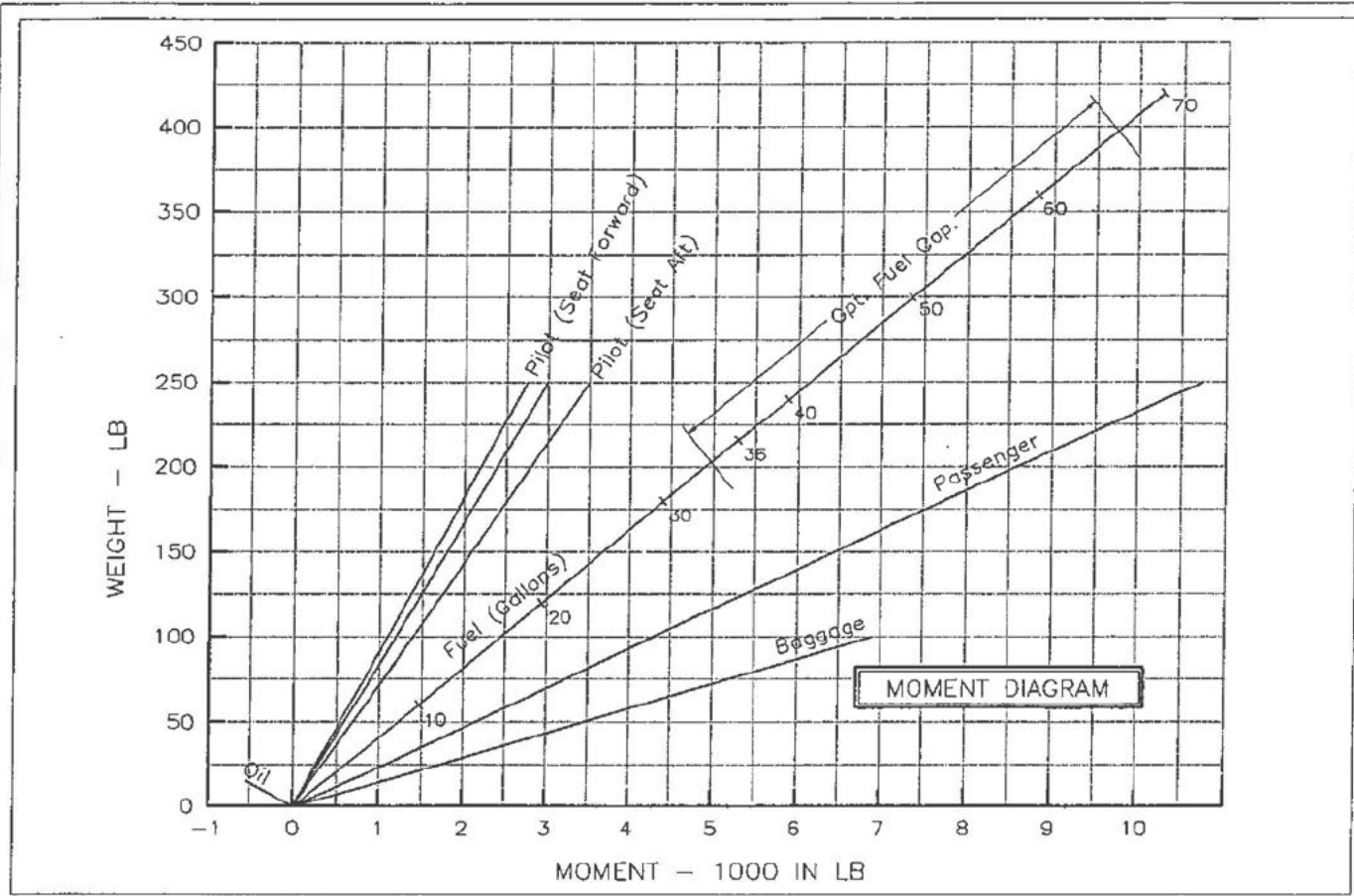
6.0 WEIGHT AND BALANCE

The weight and balance report gives the official aircraft empty weight, empty moment, empty C.G., and useful load. The empty weight and center of gravity includes the unuseable fuel for the particular fuel system installed. Undrainable oil weight and C.G. included for constant speed propeller installations.

6.3 EQUIPMENT LIST

Each item installed on the airplane at the time of weighing is marked with an "X" on the equipment list. The weight and moment arm of each item are also shown.

# LOADING SCHEDULE 8GCBC



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 falling within the envelope meets all balance requirements.

