

MAULE AIRCRAFT CORPORATION

MOULTRIE, GEORGIA

A I R P L A N E F L I G H T M A N U A L

FOR

MAULE M-5-180C

Airplane Serial No. _____

FAA Registration No. _____

THIS DOCUMENT MUST BE KEPT IN THE AIRPLANE AT ALL TIMES

FAA APPROVED: Francis C. Rock
Acting Chief, Engineering and Manufacturing Branch

DATE: April 19, 1979


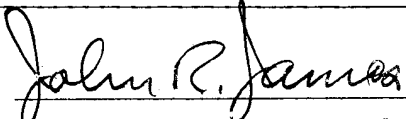
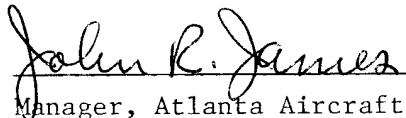

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AIRPLANE FLIGHT MANUAL

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LOG OF REVISIONS

PAGE i

REV.	TO PAGE	DESCRIPTION	APPROVAL AND DATE
A.	All	Table of Contents added, format changed, no change in content.	 FRANCIS C. ROCK Acting Chief, Engineering and Manufacturing Branch Southern Region, FAA Date: <u>July 23, 1979</u>
B	11,12,13	Revised ALTERNATOR FAILURE to include aircraft with (Lamar) Alternator Control System.	 Manager, Atlanta Aircraft Certification Office FAA, Central Region Date: <u>February 21, 1984</u>
C	2	Revised Oil Pressure limits and Fuel limitation.	 Manager, Atlanta Aircraft Certification Office FAA, Central Region Date: <u>April 6, 1984</u>
D	5	In Section II, <u>EXTERIOR PREFLIGHT INSPECTION</u> , added 18a. and revised 5. to include draining of the Main Fuel Tank sumps.	 Acting Manager, Atlanta Aircraft Certification Off. FAA, Central Region Date: <u>April 12, 1984</u>

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(s/n 8001C-8069C)

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LOG OF SUPPLEMENTS

SUPP. NO.	NO. OF PAGES	DESCRIPTION	APPROVAL DATE
1	2	Installation of 20°/40° Flap Ratchet P/N 3207B – Maule Service Letter No. 49.	04/01/83
2	2	Flight operation with either one (not both) of the Front doors removed.	08/20/02
3	2	Installation of Lamar Alternator Control System – Maule Service Letter No. 60.	09/20/84
-	2	Operation of aircraft when M-5 Wing Assemblies 2110X-30 (with Main Fuel Tanks P/N 2167X) are installed - Maule Modification Kit No. 15.	10/08/96
-	5	Installation of Apollo MX20 Multi-Function Display - Maule Drawing 7265A	08/15/02
-	8	Installation of GARMIN GNC-420 (GPS/COMM) System per Maule Drawing 7251A.	06/30/03
-	9	Installation of GARMIN GNS-530 (GPS/NAV/COMM) System per Maule Drawing 7253A.	06/30/03
-	4	Installation of GARMIN GTX-330 Mode S Transponder Traffic Information System (TIS) per Maule Drawing 7255A.	06/30/03

D

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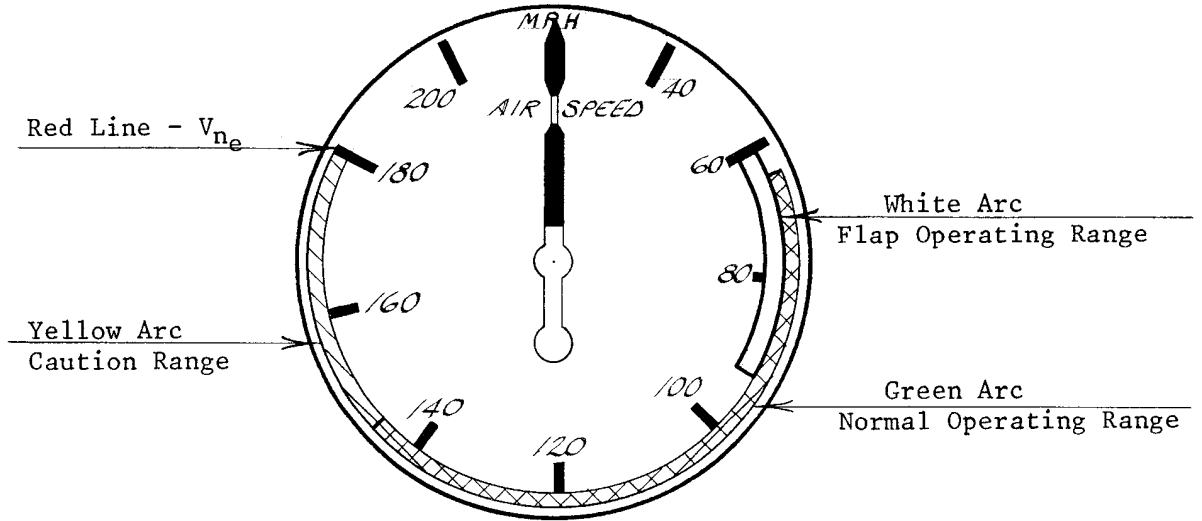
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SECTION I
OPERATING LIMITATIONS

AIRSPEED LIMITS: All airspeeds are calibrated airspeeds.

AIRSPEED INDICATOR MARKINGS:



EXPLANATION OF AIRSPEED INDICATOR MARKINGS:

Red Radial Line- Never exceed speed (V_{ne}), 180 mph (156K): Maximum safe airspeed in smooth air.

Yellow Arc- Caution Range, 145-180 mph (126-156K): Extends from design cruise speed (V_c) to never exceed speed. Operation in this speed range should be conducted only in smooth air, and control movements should not be large or abrupt.

Green Arc- Normal Operating Range, 65-145 mph (57-126K): Extends from flaps up, power off stall speed at 2300 lbs. (V_{s1}) to design cruise speed.

White Arc- Flap Operating Range, 60-94 mph (53-82K): Extends from full flap, power off stall speed at 2300 lbs. (V_{s0}) to the maximum flaps extended speed (V_{fe}).

DESIGN MANEUVERING SPEED: The maximum safe airspeed at which full aerodynamic controls can be applied (V_a) is 125 MPH (109K). This airspeed is not marked on the airspeed indicator.

POWER PLANT LIMITS:

Engine: Lycoming O-360-C1F

Engine Limits: 180 hp @ 2700 RPM, Full Throttle Continuous

Propeller: Hartzell HC-C2YR-1BF/F7666A

Fuel: 100/100 LL Minimum Grade Aviation Gasoline

Engine Instrument Markings:

Cylinder Head Temperature:	Green Arc - Normal Operating Range, 200°F - 435°F.
	Red Radial - Operating Limit, 500°F.
Oil Temperature:	Green Arc - Normal Operating Range, 140°F - 245°F.
	Red Radial - Operating Limit, 245°F.
Oil Pressure: (Applicable to Ser. No.'s 8001C thru 8022C only)	Green Arc - Normal Operating Range, 60 to 90 psi.
	Yellow Arc - Caution Range, 25 to 60 psi and 90 to 100 psi.
	Red Radial - Minimum Operating pres- sure, 25 psi.
	Red Radial - Maximum Operating Pres- sure, 100 psi.
Oil Pressure: (Applicable to Ser. No.'s 8023C and up only)	Green Arc - Normal Operating Range, 55 to 95 psi.
	Yellow Arc - Caution Range, 25 to 55 psi and 95 to 115 psi.
	Red Radial - Minimum Operating Pres- sure, 25 psi.
	Red Radial - Maximum Operating Pres- sure, 115 psi.
Manifold Pressure:	Green Arc - Normal Operating Range, 14.5 to 29 ins. of Mercury.
Fuel Pressure:	Green Arc - Normal Operating Range, .5 to 8 psi.
	Red Radial - Minimum Pressure, .5 psi.
	Red Radial - Maximum Pressure, 8 psi.
Tachometer:	Green Arc - Normal Operating Range, 2250 - 2600 RPM.

- " NO AEROBATIC MANEUVERS, INCLUDING SPINS, ARE APPROVED "
- " ROUGH AIR OR MANEUVERING SPEED: 125 mph (109K) "
- " SEE LOADING INSTRUCTIONS IN WEIGHT AND BALANCE SECTION OF AIRPLANE FLIGHT MANUAL "
- " THIS AIRPLANE APPROVED FOR DAY OR NIGHT IFR NON-ICING FLIGHT WHEN EQUIPPED IN ACCORDANCE WITH FAR 91 OR FAR 135 "
- " DO NOT TURN OFF ALTERNATOR IN FLIGHT EXCEPT IN CASE OF EMERGENCY "
- " FUEL REMAINING IN TANK WHEN INDICATOR READS ZERO CANNOT BE USED SAFELY IN FLIGHT "

The following placards are located next to the fuel filler caps on the top of the wing.

Inboard tanks: "FUEL - 100/130 OCTANE - 21.5 GAL "

Outboard tanks: (If installed) "FUEL -100/130 OCTANE - 11.5 GAL "

SECTION II

NORMAL OPERATING PROCEDURES:

PREFLIGHT INSPECTION:

Before entering aircraft.....REMOVE CONTROL LOCKS

INTERIOR:

1. All Electrical Switches.....OFF
2. Master Switch.....ON
3. Fuel Gauges.....CHECK INDICATIONS
4. Master Switch.....OFF
5. Flaps.....FULL DOWN

EXTERIOR: Begin at the left front door, proceed around the left wing to the nose area, then around the right wing and back to the fuselage, then around the tail section.

1. Fuel drains behind left step.....DRAIN TO CHECK FOR WATER
2. Left Flap.....CHECK HINGES & CONTROL ATTACHMENT

NOTE: Main Fuel tank drains (Lowest part of the fuel system) are located behind the step on the left side, front drain is left tank, rear drain is right tank. Auxiliary tank drains are flush valves located at the rear of each tank.

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- 3. Aileron.....CHECK HINGES & CONTROL ATTACHMENT
- 4. Wing Top.....CHECK FOR WRINKLES AS INDICATION OF INTERNAL DAMAGE
- 5. Wing Main & Aux Fuel Tank Drains.....DRAIN TO CHECK FOR WATER (2)
- 6. Wing Tip and Nav. Light.....CHECK FOR DAMAGE
- 7. Auxiliary Fuel Tanks.....VISUALLY CHECK QUANTITY
- 8. Landing Light.....CHECK FOR DAMAGE
- 9. Wing Tiedown.....REMOVE
- 10. Stall Warning Switch.....CHECK FOR FREEDOM OF MOVEMENT
- 11. Main Fuel Tank.....VISUALLY CHECK QUANTITY
- 12. Left Main Gear.....CHECK TIRE INFLATION AND BRAKE LINE SECURITY
- 13. Bottom left side of cowl.....DRAIN GASCOLATOR (1)
- 14. Top Cowl; Oil access Door.....CHECK OIL QUANTITY: 5 Qts. Min., 8 Qts. Max.
- 15. Propeller.....CHECK LEADING EDGE FOR DAMAGE
- 16. Air Inlets.....CHECK FOR FOREIGN OBJECTS, INSPECT VISIBLE CONNECTIONS AND COMPONENTS
- 17. Right Landing Gear.....CHECK TIRE INFLATION AND BRAKE LINE SECURITY
- 18. Right Wing and Controls.....INSPECT SAME AS LEFT WING
- 18a. Wing Main & Aux Fuel Tank Drains.....DRAIN (2)
- 19. Right Fuselage side and top.....INSPECT FOR WRINKLES AS INDICATION OF INTERNAL DAMAGE

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- 20. Right Stabilizer.....CHECK ATTACHMENT POINTS
AND STRUT
- 21. Right Elevator.....CHECK HINGE POINTS
- 22. Rudder.....CHECK HINGE POINTS, CONTROL
ATTACHMENTS, NAV. LIGHT
- 23. Tailwheel.....CHECK INFLATION, ATTACHMENTS,
REMOVE TIE-DOWN
- 24. Left Elevator.....CHECK TAB CONTROLS AND ALL
HINGE POINTS
- 25. Left Stabilizer.....CHECK ATTACHMENT AND STRUT
- 26. Left Fuselage side and bottom.....CHECK FOR WRINKLES AS INDI-
CATION OF INTERNAL DAMAGE

OPERATING CHECK LISTS:

BEFORE STARTING:

- 1. Seat Belts.....FASTEN
- 2. Flaps.....UP
- 3. Circuit Breakers.....CHECK

STARTING:

- 1. Mixture Control.....FULL RICH
- 2. Primer Pump.....AS REQUIRED
- 3. Throttle.....CRACK OPEN
- 4. Propeller Control.....FULL INCREASE
- 5. Master Switch.....ON
- 6. Propeller Area.....CHECK & WARN CLEAR
- 7. Parking or Toe Brakes.....ON

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8. Starter Switch.....TWIST FULL RIGHT TO ENGAGE

9. After Starting.....CHECK OIL PRESSURE

CAUTION

IF OIL PRESSURE DOES NOT EXCEED 25 psi WITHIN 30 SECONDS, SHUT DOWN ENGINE.

10. Alternator Switch.....ON

11. Anti-Collision Light.....ON

12. Radios and other Electricals.....AS REQUIRED

13. Parking Brake.....OFF

WARNING

IN EVENT OF ENGINE FIRE DURING START, MIXTURE-FULL LEAN, THROTTLE OPEN, CONTINUE CRANKING SEVERAL REVOLUTIONS, ACCOMPLISH ENGINE EMERGENCY SHUT DOWN, MASTER SWITCH OFF.

ENGINE CHECK:

1. Parking Brake.....ON, IF DESIRED

2. Throttle.....INCREASE TO 2000 RPM

3. Magnetos.....SWITCH TO RIGHT, BOTH, LEFT, BOTH, CHECKING RPM DROPS

CAUTION

MAXIMUM RPM DROP IS 175 RPM. MAXIMUM ALLOWABLE DIFERENTIAL IS 50 RPM.

4. Propeller Control.....RETARD FULLY UNTIL RPM DROP IS NOTED. REPEAT.

5. Carburetor Heat Control.....PULL ON

NOTE

NORMAL RPM DROP WITH CARBURETOR HEATER ON IS 150

6. Engine Gauges.....CHECK IN GREEN

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- 7. Carburetor Heat Control.....PUSH OFF
- 8. Throttle.....RETARD TO IDLE

BEFORE TAKEOFF:

- 1. Fuel Selector.....ON FULLEST TANK
- 2. Flaps.....AS DESIRED
- 3. Trim Control.....TAKEOFF POSITION
- 4. Flight Controls.....CHECK FOR FREEDOM AND FULL TRAVEL
- 5. Mixture Control.....FULL RICH (EXCEPT AT HIGH ALTITUDE AIRPORTS)
- 6. Propeller Control.....FULL INCREASE
- 7. Carburetor Heat Control.....OFF
- 8. Vacuum Gauge.....CHECK IN GREEN
- 9. Engine Instruments.....RECHECK IN NORMAL RANGE
- 10. Fuel Gauges.....RECHECK QUANTITY
- 11. Avionics.....AS DESIRED
- 12. Altimeter.....SET
- 13. Directional Gyro.....SET
- 14. Seatbelts.....RECHECK FASTENED
- 15. Doors.....CLOSED AND LOCKED

LANDING CHECKLIST:

- 1. Mixture Control.....FULL RICH (EXCEPT AT HIGH ALTITUDE AIRPORTS)
- 2. Fuel Selector Valve.....ON FULLEST TANK
- 3. Propeller Control.....FULL INCREASE
- 4. Flaps.....AS REQUIRED

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5. Carburetor Heat Control.....ON WHEN AT IDLE
6. Seat Belts.....TIGHTEN
7. Trim.....AS REQUIRED

SHUT DOWN CHECKLIST:

1. Avionics.....OFF
2. Anti-Collision Light.....OFF
3. All Other Electrical Switches.....OFF
4. Flaps.....UP
5. Parking Brake.....ON, IF DESIRED

TO STOP ENGINE:

6. Mixture Control.....FULL LEAN
7. Magneto Switch (After Prop Stops)...OFF
8. Master Switch.....OFF

NORMAL FLIGHT OPERATIONS:

FLAP SETTINGS:

Normal Takeoff - 0° (No flaps) 15° (First notch) flaps permissible for takeoff.

Short, Rough, Soft Field Takeoff- 35° (Second Notch) until safely airborne, then retract to 15°.

Normal Climb - 0°

Best Angle Climb - 15°

Landing - 35° (0° or 15° permissible).

Climbing:

Best rate of climb - 90 mph CAS, no flaps

Best angle of climb - 75 mph CAS, 15° flaps.

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CAUTION

CLIMB BELOW 90 MPH ONLY AS NECESSARY AND CHECK CYLINDER HEAD TEMPERATURE FREQUENTLY WHEN DOING SO.

RUDDER TRIM:

Rudder trim can be adjusted in the right direction only. It is most useful during takeoff and climb to reduce the right rudder pedal load and is to be used at the pilot's discretion.

STALLS:

Stalls are clean and predictable, with little or no pre-stall buffet. Loss of altitude prior to recovery from a stall may be as much as 200 feet. The red stall warning light on the instrument panel will illuminate at 5 to 10 mph above the stall speed.

CAUTION

THE STALL WARNING LIGHT IS INOPERATIVE WHEN THE MASTER SWITCH IS OFF.

LANDINGS AND TAKEOFFS:

Maximum demonstrated 90° crosswind component is 14 mph.

FUEL SYSTEM:

Fuel is fed only from the main (inboard) tanks, and is controlled by the selector valve on the left kick panel. Optional wing tip tanks (if installed) feed their respective main tanks via transfer pumps, which are controlled by switches on the instrument panel. These transfer pumps transfer fuel at a rate of .4 gallons per minute, or approximately one half hour for a full auxiliary tank. Since over-filling a main tank from an auxiliary tank will force excess fuel overboard, it is recommended that the transfer pumps not be activated until their respective main tanks are less than 1/2 full.

DOOR-OFF OPERATION:

This aircraft may be operated with the rear passenger door or rear passenger and baggage doors off. When doing so, observe the following additional limitations.

1. Maximum airspeed - 125 mph
2. Maximum bank angle - 30°
3. Maximum Yaw angle - 10°
4. No smoking permitted
5. Limit flight to VFR conditions

NOISE LEVEL:

No determination has been made by the Federal Aviation Administration that the noise level of this airplane is, or should be acceptable or unacceptable for operation at, into, or out of any airport. The noise level obtained during certification, per FAR-36, was dBA 72.32. This was determined under the following conditions: Gross Wt. 2300#, 2600 RPM, Full Throttle.

USE OF CARBURETOR HEAT:

Normal Flight:

If icing conditions are suspected, the manifold pressure should be closely monitored. Accumulation of ice will result in a loss of manifold pressure. Apply full carb. heat until the manifold pressure returns to normal, then full cold.

Traffic Pattern:

If icing conditions are suspected, prior to power reduction, apply full carb. heat. This allows engine heat to melt any ice that may have accumulated in the carburetor. Leave on throughout the landing.

NOTE: Avoid the use of partial carburetor heat. Partial heat may, under certain atmospheric conditions, cause ice to form. If icing conditions are suspected, frequent power changes are recommended to prevent the throttle butterfly valve from freezing in position.

WARNING:

ANTI-COLLISION LIGHT MAY CAUSE ADVERSE EFFECT ON PILOT WHEN FLYING IN VISIBLE MOISTURE, OVERCAST OR HAZE. IT IS RECOMMENDED THAT IT BE TURNED OFF UNDER THESE CONDITIONS.

SECTION III

EMERGENCY PROCEDURES:

SPIN RECOVERY:

Intentional spins are prohibited. If the aircraft inadvertently enters a spin, immediately use opposite rudder and neutral ailerons, followed closely by down elevator, for recovery.

ALTERNATOR FAILURE:

Alternator output should be monitored by reference to the ammeter located on the right side of the engine instrument cluster. Should the ammeter indicate a minus deflection when engine RPM is above 900, reset the ALT switch ON and observe whether the ammeter is indicating a positive charge. If the charge is still negative, reduce the electrical load as much as possible, land as soon as is practical and investigate the electrical system malfunction before further flight.

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ALTERNATOR FAILURE: (Cont'd)

Applicable to Ser. No.'s 8001C thru 8022C:

The electrical system is protected from overvoltage by an overvoltage relay. Should the relay trip the alternator off, it will be indicated by illumination of the white OVERVOLTAGE RELAY "RESET" switch light located on the left instrument panel sub-panel. To reset the relay, momentarily push the "RESET" switch light. If the system will not reset or the relay repeatedly trips, reduce electrical load as much as possible, land as soon as practicable and investigate the electrical system malfunction before further flight.

Applicable to Ser. No.'s 8023C and up:

Illumination of the red "ALTERNATOR OFF WARNING" light indicates alternator to be inoperative. Should this occur, push ALT switch OFF then ON. Repeat two times as necessary to reset. If system will not reset, reduce the electrical load as much as possible, land as soon as practical and investigate the electrical system malfunction before further flight.

ENGINE EMERGENCY SHUT DOWN:

1. Mixture.....FULL LEAN
2. Fuel Selector.....OFF
3. Ignition Switch.....OFF



THE OVERVOLTAGE RELAY WARNING LIGHT WILL NOT OPERATE WHEN THE MASTER SWITCH IS OFF.

EMERGENCY CHECK LISTS:

ENGINE FAILURE:

1. Mixture Control.....FULL RICH
2. Fuel Selector Valve.....ON FULLEST TANK
3. Boost Pump.....ON
4. Propeller Control.....FULL INCREASE



PROPELLER MAY NOT WINDMILL BELOW 70 MPH.

5. Auxiliary Tank Pump.....ON FOR TANK FEEDING ENGINE, IF AUXILIARY TANK HAS FUEL.

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FORCED LANDING:

1. Airspeed.....MAINTAIN AIRCRAFT CONTROL
2. Flaps.....UP FOR BEST GUIDE, AS
NECESSARY FOR LANDING
3. Seat Belts.....TIGHTEN
4. Loose Objects.....STOW
5. Fuel Selector Valve.....OFF
6. Master and Magneto Switches.....OFF JUST PRIOR TO LANDING

ENGINE FIRE IN FLIGHT:

1. Fuel Selector.....OFF
2. Throttle.....FULL OPEN
3. Magneto Switch.....OFF
4. Cabin Vent and Heat Controls.....CLOSED
5. Window Vents.....CLOSED
6. LAND AS SOON AS PRACTICABLE.

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SECTION IV

WEIGHT AND BALANCE CONTROL

Equipment List: Required and Optional
Weight and Balance Data Form