

# MAULE AEROSPACE TECHNOLOGY, INC.

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F A A A P P R O V E D

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

FOR

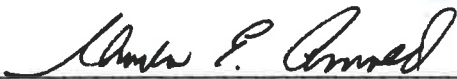
MAULE M-5-235C

s/n's 7470C and Up

Airplane Serial No. \_\_\_\_\_

Registration No. \_\_\_\_\_

THIS DOCUMENT MUST BE KEPT IN THE AIRPLANE AT ALL TIMES.

FAA APPROVED: *acting*   
Manager, Atlanta Aircraft Certification  
Office, FAA, Central Region

DATE: JAN 13 1986

IT'S PERFORMANCE THAT COUNTS!

MAULE AEROSPACE TECHNOLOGY, INC.

AIRPLANE FLIGHT MANUAL

For MAULE M-5-235C  
S/N's 7470C and Up

Page i

LOG OF REVISIONS

REV.	TO PAGES	DESCRIPTION	APPROVAL AND DATE

MAULE AEROSPACE TECHNOLOGY, INC.  
AIRPLANE FLIGHT MANUAL

**MAULE M-5-235C**

(s/n 7470C - 7515C)

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**LOG OF SUPPLEMENTS**

(5)

SUPP NO.	NO. OF PAGES	DESCRIPTION	APPROVAL DATE
-	4	Installation of <b>Aqua 2400 Floats</b> @2530# GW	05/27/77
2	2	Installation of <b>McCaughey B2D37C224/90RA-4 (86")</b> Prop with Lyc. O-540-J/IO-540-W Engine.	04/19/12
3	2	Installation of Lycoming O-540- <b>J3A5</b> or IO-540- <b>W1A5</b> Engine.	09/12/94
4	6	Inst. of <b>FluidDyne C3000H Wheel-Skis</b> - Maule Dwg <b>9174A</b> , Rev. <b>C</b> or later.	01/30/01
5	2	Installation of <b>FluidDyne A2500A</b> Wheel Replacement <b>Skis</b> - Maule Dwg <b>9077A</b> .	12/04/81
6	4	Installation of <b>EDO 797-2500 Amphibious</b> Floats - drawing 9057A. Rev. A	12/08/98
7	2	Installation of <b>Hartzell HC-C2YR-1BF/F8468A-3R (81")</b> Propeller.	09/02/82
8	2	Installation of <b>SW Instrument Cluster</b> P/N 436484.	01/03/83
9	2	Installation of Lamar <b>Alternator Control</b> System.	07/12/83
10	2	Installation of <b>EDO 248B2440 Floats</b> per drawing 9143A. (05/06/85) Rev. A	12/08/98
11	2	Installation of Lycoming O-540- <b>B4B5</b> Engine. (04/25/88) Rev. B	02/02/06
12	2	Installation of <b>McCaughey B2D37C224-B/G-90RA-9 (81")</b> Propeller. Rev. A	08/10/92
13	2	Installation of <b>McCaughey B3D32C414-C/G-82NDA-2 (80")</b> Propeller Rev. A	08/10/92
14	2	Flight operation with either one (not both) of the <b>Front Doors removed</b> .	06/25/92
15	2	Inst. of <b>McCaughey B3D32C414-[ J/ ]-82NDA-2 (80")</b> or <b>-4 (78")</b> Propeller with Lyc. O-540- <b>B4B5</b> .	04/26/96
-	2	Inst. of 2110X-30 <b>Wing Assemblies</b> with <b>2167X</b> Main Tanks - Mod <b>Kit No. 15</b> .	10/08/96
-	3	Operation of aircraft when a <b>5<sup>th</sup> Seat</b> is installed in rear cabin - Maule <b>Mod Kit No. 8</b> .	09/02/97
-	4	Installation of <b>Aqua 2200 Floats</b> per STC SA00758CH.	09/18/97
16	2	Inst. of <b>Hartzell HC-C2YR-1BF/8477D-6 or HC-C3YR-1RF/F-7693(F)-( )</b> Prop - Maule Dwg <b>5279F</b> . Rev. B	01/28/04
17	6	Inst. of <b>S-TEC System 55 Two Axis Autopilot ST-620 (14v)</b> - Maule Dwg <b>9196A</b> , Rev. <b>A</b> or later. (Land)	04/04/00
18	6	Inst. of <b>S-TEC System 55 Two Axis Autopilot ST-620 (14v)</b> - Maule Dwg <b>9196A</b> , Rev. <b>A</b> or later. (Sea)	04/04/00
19	9	Inst. of <b>S-TEC System 50 Two Axis Autopilot ST-418-50 (14v)</b> - Maule Dwg <b>9193A</b> , Rev. <b>B</b> or later.	01/05/00
20	9	Inst. of <b>S-TEC System 30 Two Axis Autopilot ST-810-30 (14v)</b> - Maule Dwg <b>9197A</b> , Rev. <b>A</b> or later. (Land)	01/21/00
21	9	Inst. of <b>S-TEC System 30 Two Axis Autopilot ST-810-30 (14v)</b> - Maule Dwg <b>9197A</b> , Rev. <b>A</b> or later. (Sea)	01/21/00
22	9	Inst. of <b>S-TEC System 20 Single Axis Autopilot ST-810-20 (14v)</b> - Maule Dwg <b>9197A</b> , Rev. <b>B</b> or later. (Land)	03/20/00
23	9	Inst. of <b>S-TEC System 20 Single Axis Autopilot ST-810-20 (14v)</b> - Maule Dwg <b>9197A</b> , Rev. <b>B</b> or later. (Sea)	03/20/00
24	7	Inst. of <b>S-TEC System 40 Single Axis Autopilot ST-418-40 (14v)</b> - Maule Dwg <b>9193A</b> , Rev. <b>C</b> or later.	10/29/01
-	5	Installation of <b>Apollo MX20 Multi-Function Display</b> - Maule Drawing 7265A.	08/15/02
-	8	Inst. of <b>GARMIN GNC-420 (GPS/COMM) System</b> - Maule Drawing <b>7251A</b> .	06/30/03
-	9	Inst. of <b>GARMIN GNS-530 (GPS/NAV/COMM) System</b> - Maule Drawing <b>7253A</b> .	06/30/03
-	4	Inst. of <b>GARMIN GTX-330 Mode S Transponder Traffic Info System (TIS)</b> - Maule Dwg <b>7255A</b> .	06/30/03
-	3	Operation of aircraft when Micro AeroDynamics <b>Vortex Generator System</b> is installed - Maule Dwg <b>9177A</b> .	12/16/05
-	8	Installation of <b>Lycoming IO-540-V4A5</b> Engine Installation per <b>Mod Kit #63</b> .	05/25/06
-	14/15	Installation of <b>GARMIN 400W/500W</b> Series Navigation System - Maule Drawing <b>7260A/7261A</b> .	10/11/07
-	2	Inst. of <b>McCaughey B3D32C414-C/G-82NDA-4 (78")</b> Propeller – Maule Dwg <b>5490E</b> , Rev. <b>E</b> or later.	05/11/09
25	2	Inst. of <b>McCaughey B2D37C224-B/G-90RA-9 (81")</b> 2 Blade Prop with O-540- <b>B4B5</b> Engine – Maule Dwg <b>5488E</b> , Rev. <b>E</b> or later.	03/20/14

AIRPLANE FLIGHT MANUAL

For MAULE M-5-235C

S/N's 7470C and Up

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MANUFACTURERS DATA

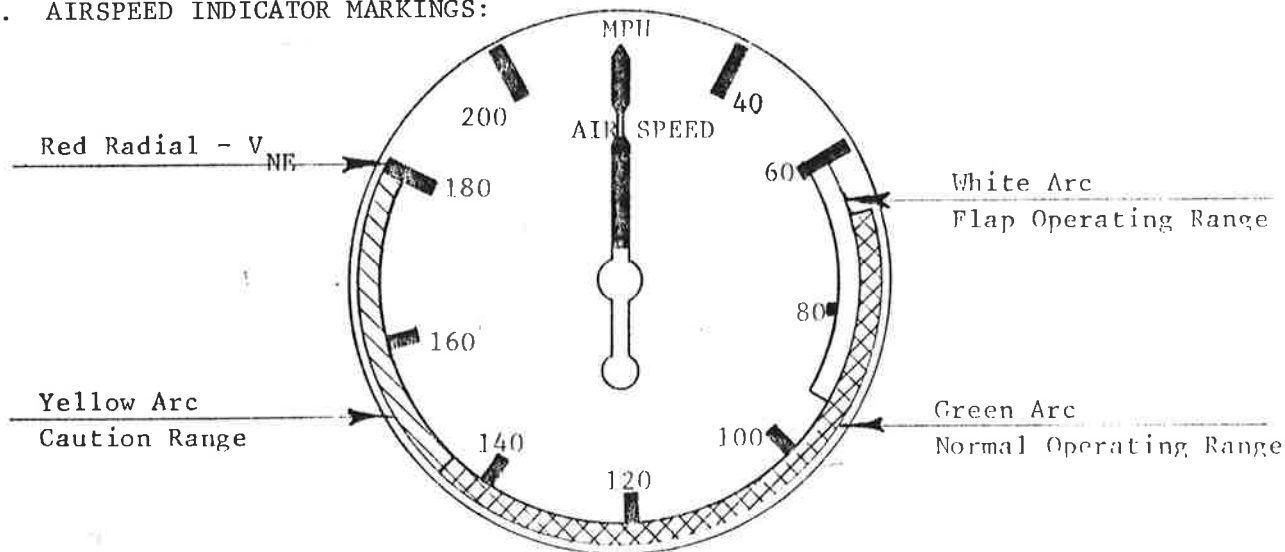
Equipment List, Required and optional  
Weight and Balance Data Form

SECTION I

OPERATING LIMITATIONS

1.1 AIRSPPEED LIMITS: All airspeeds are calibrated airspeeds.

A. AIRSPPEED INDICATOR MARKINGS:



B. EXPLANATION OF AIRSPPEED 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): 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, 68 - 145 mph (59 - 126K): Extends from flaps up, power off stall speed at 2500 lbs. ( $V_{S1}$ ) to design cruise speed ( $V_C$ ).

White Arc - Flap Operating Range, 60 - 94 mph (52 - 82K): Extends from full flap, power off minimum stall speed at 2500lbs. ( $V_{S0}$ ) to the maximum flaps extended speed ( $V_{FE}$ ).

C. 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.

1.2 POWER PLANT LIMITATIONS:

Engine: Lycoming O-540-J1A5D or IO-540-W1A5D.  
 Engine Limits: 235 hp @ 2400 rpm, Full Throttle Continuous.  
 Propeller: Hartzell HC-C2YR-1BF/F8468A-6R.  
 Fuel: 100/100LL 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: 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 Pressure 25 psi.  
 Red Radial - Maximum Operating Pressure, 100 psi.

Manifold Pressure: Green Arc - Normal Operating Range, 14.5 - 29 ins. of Mercury.

Fuel Pressure: Green Arc - Normal Operating Range, 0.5 to 8 psi.  
 (O-540 Only) Red Radial - Minimum Pressure, 0.5 psi.  
 Red Radial - Maximum Pressure, 8.0 psi.

Fuel Flow:(IO-540 only) Red Radial - Maximum, 8.9 psi or 26.9 GPH.

Tachometer: Green Arc - Normal Operating Range, 2050-2400 RPM.  
 Red Radial - Maximum RPM, 2400 RPM.

//////////  
 ///CAUTION///  
 //////////

DO NOT EXCEED 23 INCHES M.P. BELOW 2050 RPM.  
 THIS IS A PROPELLER VIBRATORY STRESS LIMITATION.

1.3 MAXIMUM WEIGHT: 2500 Pounds

1.4 CENTER OF GRAVITY LIMITS: +13.2 to +20.5 inches @ 2500#  
+11.7 to +20.5 inches @1700# or less

Straight Line Variation between points given.  
Datum: Wing Leading Edge.

NOTE: It is the responsibility of the pilot to insure that the airplane is properly loaded. Refer to the Weight and Balance Data for baggage/cargo loading recommendations and loading graphs.

1.5 MANEUVERS: Only Normal Category Maneuvers, including Stalls, Lazy Eights, Chandelles and steep turns, involving bank angles not greater than 60°, are approved in this airplane.

/////////////////  
///CAUTION/// AEROBATICS AND INTENTIONAL SPINS PROHIBITED.  
/////////////////

1.6 FLIGHT LOAD FACTORS: Flaps Fully Retracted. 3.8g Positive to 1.5g Negative  
Flaps Extended: 1.9g Positive to 0g Negative

1.7 USABLE FUEL: MAIN tanks - 20.0 Gal. ea.  
OPTIONAL AUXILIARY TANKS - 11.5 Gal. ea

1.71 UNUSABLE FUEL: 1.5 Gallons per main tank.

/////////////////  
///CAUTION/// FUEL REMAINING IN TANK WHEN INDICATOR READS  
EMPTY CANNOT BE USED SAFELY IN FLIGHT.  
/////////////////

1.8 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.

1.9 PLACARDS:

The following placards are in the cockpit in clear view of the pilot.

"THIS AIRPLANE MUST BE OPERATED AS A NORMAL CATEGORY AIRPLANE IN COMPLIANCE WITH THE OPERATING LIMITATIONS STATED IN THE AIRPLANE FLIGHT MANUAL AND IN THE FORM OF PLACARDS AND MARKINGS."

"NO AEROBATIC MANEUVERS, INCLUDING SPINS, 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."

"DO NOT EXCEED 23 INCHES M.P. BELOW 2050 RPM."

The following placard is located at the main fuel tank selector valve.

FUEL SELECTOR VALVE  
LEFT: 20 GAL  
OFF BOTH  
RIGHT: 20 GAL

The following placard is located on the instrument panel at the auxiliary tank transfer switches:

FUEL TRANSFER PUMPS  
PUSH FOR AUX QUANT. LEFT RIGHT PUSH FOR AUX. QUANT.

FUEL CAPACITY: MAIN TANKS 20 GAL USABLE EACH, AUX. TANKS 11.5 GAL USABLE EACH.



SECTION II

NORMAL OPERATING PROCEDURES

2.1 PREFLIGHT INSPECTION:

A. INTERIOR:

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

B. 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 step.....DRAIN (2)
2. Left Flap.....CHECK HINGES & CONTROL ATTACHMENT
3. Aileron.....CHECK HINGES & CONTROL ATTACHMENT
4. Wing Top.....CHECK FOR WRINKLES AS INDICATION OF INTERNAL DAMAGE
5. Wing Main and Aux Fuel Tank Drains....Drain (2)
6. Wing tip and nav. light.....CHECK FOR DAMAGE
7. Auxiliary fuel tank.....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 Landing 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: 9 qts. MIN.  
12 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 and Aux Fuel Tank Drains....Drain (2)
19. Right fuselage side and top.....INSPECT FOR WRINKLES AS INDICATION OF INTERNAL DAMAGE
20. Right Stabilizer.....CHECK ATTACHMENT POINTS AND STRUT
21. Right Elevator.....CHECK HINGE POINTS
22. Rudder.....CHECK HINGE POINTS, CONTROL ATTACHMENTS AND NAV. LIGHT
23. Tailwheel.....CHECK INFLATION, ATTACHMENTS, REMOVE TIEDOWNS

- 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 INDICATION OF INTERNAL DAMAGE

2.2 OPERATING CHECK LISTS:

A. BEFORE STARTING:

- 1. Seat Belts and Shoulder Harnesses...FASTENED
- 2. Flaps.....RETRACTED
- 3. Circuit Breakers.....CHECK

B. STARTING:

- 1. Parking or toe brakes.....ON
- 2. Fuel Selector Valve.....ON, FULLEST TANK
- 3. Throttle.....OPEN ONE FOURTH INCH
- 4. Propeller Control.....FULL INCREASE RPM
- 5. Mixture control.....FULL RICH
- 6. Anti-Collision light.....ON
- 7. BAT and ALT switch.....ON
- 8. Primer (0-540).....AS REQUIRED
- Boost pump (10-540).....ON, AS REQUIRED TO PRIME, THEN OFF

NOTE: FOR A HOT START DO NOT PRIME

- 9. Mixture Control (10-540 ONLY).....FULL LEAN
- 10. Starter switch.....TWIST FULL RIGHT TO ENGAGE

//////////

///CAUTION///

//////////

IN EVENT OF ENGINE FIRE, CONTINUE CRANKING.  
IF ENGINE FAILS TO START AFTER SEVERAL REVOLUTIONS  
PULL MIXTURE FULL LEAN, SECURE IGNITION, BAT AND ALT  
SWITCHES, TURN FUEL VALVE OFF, AND EXIT AIRCRAFT.

- 11. When engine starts, Mixture Control (10-540 ONLY).....FULL RICH
- 12. After starting.....CHECK OIL PRESSURE

//////////

///CAUTION///

//////////

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

- 13. Alternator.....CHECK CHARGING
- 14. Radios and other electrical switches.....AS REQUIRED
- 15. Parking Brakes.....OFF

2.2 OPERATING CHECK LISTS: (CON'T)

C. ENGINE CHECK:

1. Parking Brake.....ON, IF DESIRED
2. Engine Instruments.....CHECK IN GREEN ARCS
3. Throttle.....INCREASE TO 2000 RPM
4. Magnetos.....SWITCH TO RIGHT, LEFT, BOTH  
CHECKING RPM DROPS

//////////  
///CAUTION///  
//////////

A RPM DROP OF MORE THAN 175 RPM OR A DIFFERENCE  
BETWEEN LEFT AND RIGHT OF MORE THAN 50 RPM IS  
UNACCEPTABLE.

5. Propeller Control.....RETARD FULLY UNTIL RPM DROP  
IS NOTED. RETURN TO FULL  
INCREASE RPM. REPEAT. SET  
FULL INCREASE RPM
6. ENGINE ALTERNATE AIR control  
(IO-540).....PUSH OFF  
CARBURETOR AIR control (O-540).....PULL HOT

//////////  
///NOTE/////

NORMAL RPM DROP WITH CARBURETOR AIR HOT IS  
150 + 50 RPM

7. CARBURETOR AIR control (O-540).....PUSH COLD
8. Vacuum Gauge.....CHECK IN GREEN
9. Throttle.....RETARD TO IDLE

D. BEFORE TAKEOFF:

1. Fuel Selector.....ON FULLEST TANK
2. Flaps.....AS DESIRED FOR T.O.
3. Trim Controls.....SET FOR TAKEOFF
4. Flight Controls.....CHECK FOR FREEDOM AND PROPER  
TRAVEL
5. Mixture Control.....FULL RICH
6. Propeller Control.....FULL INCREASE RPM
7. ENGINE ALTERNATE AIR control  
(IO-540).....PUSH OFF  
CARBURETOR AIR control (O-540).....PUSH COLD
8. Engine instruments.....RECHECK IN NORMAL RANGE
9. Radios.....AS DESIRED
10. Altimeter.....SET
11. Attitude Indicator.....CHECK ERECT
12. Directional Indicator.....SET
13. Seatbelts and Shoulder Harnesses.....RECHECK FASTENED
14. Doors.....CLOSED AND LATCHED

2.2 OPERATING CHECK LISTS: (CONT'D)

E. BEFORE LANDING:

1. Seat Belts and Shoulder Harnesses.....FASTENED
2. Fuel Selector Valve.....ON FULLEST TANK
3. Mixture Control.....FULL RICH
4. Propeller Control.....FULL INCREASE RPM
5. Flaps.....AS REQUIRED
6. ENGINE ALTERNATE AIR control (10-540).....PUSH OFF  
 CARBURETOR AIR control (0-540).....PULL HOT

F. ENGINE SHUT - DOWN:

1. Parking Brake.....ON IF DESIRED
2. Radios.....OFF
3. All other electrical switches.....AS DESIRED
4. Flaps.....AS DESIRED
5. Mixture Control.....FULL LEAN
6. Magneto Switch.....OFF
7. Anti-collision light.....OFF
8. BAT and ALT switch.....OFF
9. Parking brake.....OFF (as desired)

2.3 NORMAL FLIGHT OPERATIONS:

A. RECOMMENDED FLAP SETTINGS:

Normal Takeoff - 20<sup>0</sup> (First Notch). No-flap (0<sup>0</sup>) takeoff permissible.

Normal Climb - 0<sup>0</sup>

Best Angle Climb - 20<sup>0</sup>

Landing - 40<sup>0</sup> (0<sup>0</sup> or 20<sup>0</sup> permissible)

B. Climbing:

Best Rate of Climb - 90 mph CAS, no flaps.

Best Angle of Climb - 75 mph CAS, 20<sup>0</sup> flaps.

2.3 NORMAL FLIGHT OPERATIONS: (CON'T)

B. CLIMBING: (con't)

////////////////  
///CAUTION///  
////////////////

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

C. RUDDER TRIM:

Right trim only is available. It is most useful during  
take-off and climb, to reduce the right rudder pressure  
necessary. Use at pilot's discretion.

D. STALLS:

Stalls are preceded by mild rudder buffet which can be felt  
through the rudder pedals. The red stall warning light on  
the instrument panel will illuminate at 5 to 10 mph above the  
stall speed. Loss of altitude prior to recovery from a stall  
may be as much as 200 feet.

////////////////  
///CAUTION///  
////////////////

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

E. CROSSWIND LANDINGS AND TAKEOFFS:

Maximum demonstrated 90° crosswind component is 14 mph.

F. FUEL SYSTEM MANAGEMENT:

Fuel is fed to the engine from the main (inboard) tanks, and is  
controlled by the selector valve on the left kick panel. Aux-  
iliary (outboard) tanks feed their respective main tanks via trans-  
fer pumps, which are controlled by switches on the instrument  
panel. These transfer pumps transfer fuel at a rate of 0.4 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 ex-  
cess fuel overboard, it is recommended that the transfer pumps not  
be activated until their respective main tanks are slightly more  
than one quarter full. If the tank being transferred to is feeding  
the engine, however, transfer can be initiated when the main tank  
is down to approximately one-half. Confirm fuel transfer by illu-  
mination of the transfer pump switch and an increase in the respec-  
tive main tank fuel gauge.

2.3 NORMAL FLIGHT OPERATIONS: (CON'T)

G. NOISE LEVEL:

The noise levels obtained during certification per FAR 36, were 67.6 dBA. 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.

H. ANTI-COLLISION LIGHT:

/////////////////  
////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.

EMERGENCY PROCEDURES:

3.1 RECOVERY FROM INADVERTENT SPINS:

Intentional spins are prohibited. If the aircraft inadvertently enters a spin, simultaneously apply full rudder opposite to the direction of rotation and full nose down elevator with ailerons neutral. When the rotation stops, neutralize the rudder and elevator, reduce power to idle and ease back on the control wheel as required to smoothly regain level flight. Wing flaps should be retracted to avoid exceeding the maximum flap speeds during recovery.

3.2 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. The electrical system is protected from overvoltage by an over-voltage 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.

3.3 EMERGENCY CHECK LISTS:

A. ///  
 ///ENGINE FAILURE///  
 ///

1. Mixture control.....FULL RICH

////////////////////////////////////  
 ///NOTE///// AT ALTITUDES OVER 8000 FT. A LEANER MIXTURE  
 ////////////////////////////////////// MAY BE REQUIRED.

2. CARBURETOR AIR Control (O-540).....PULL HOT  
 ENGINE ALTERNATE AIR control (IO-540).....PULL ON
3. Fuel selector valve.....SWITCH TANKS
4. Boost pump.....ON
5. Airspeed.....MAINTAIN 80 MPH MINIMUM

3.3 EMERGENCY CHECK LISTS: (CON'T)

6. Propeller control.....FULL INCREASE RPM

/////////  
////NOTE////  
/////////

PROPELLER WILL NOT WINDMILL BELOW 70 MPH.

7. Auxiliary tank pump switch.....ON FOR TANK FEEDING ENGINE  
IF AUXILIARY TANK HAS FUEL.

B. ///////////  
////FORCED LANDING////  
/////////

1. Propeller control.....FULL DECREASE FOR MAXIMUM  
GLIDE DISTANCE.

2. Airspeed.....MAINTAIN 80 MPH

3. Flaps.....UP FOR BEST GLIDE. AS NECESSARY FOR  
LANDING.

4. Seat Belts and Shoulder harnesses...TIGHTEN

5. Loose Objects.....STOW

6. Fuel Selector Valve.....OFF

7. BAT, ALT and Magneto Switches.....OFF JUST PRIOR TO LANDING

C. ///////////  
////ENGINE FIRE////  
/////////

1. Fuel selector valve.....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 POSSIBLE.



**WEIGHT AND BALANCE**

Serial Number \_\_\_\_\_ Registration Number \_\_\_\_\_

It is the responsibility of the airplane owner and the pilot to insure that the airplane is loaded properly. The empty weight, empty weight center of gravity and useful load are listed below for this airplane. If the airplane has been altered, refer to the aircraft log and/or aircraft records for this information.

WEIGHT AND BALANCE DATA SUMMARY:

Basic Empty Weight (including engine oil)..... \_\_\_\_\_ Lbs.  
Gross Weight..... 2500 Lbs.  
Useful Load..... \_\_\_\_\_ Lbs.  
Empty Center of Gravity..... \_\_\_\_\_ Inches  
Empty Weight Moment..... \_\_\_\_\_ Inch Lbs.

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CENTER OF GRAVITY RANGE:

<u>Center of Gravity Range</u>	<u>At Weight of</u>
+13.2 to +20.5 inches	2500 lbs.
+11.7 to +20.5 inches	1700 lbs.

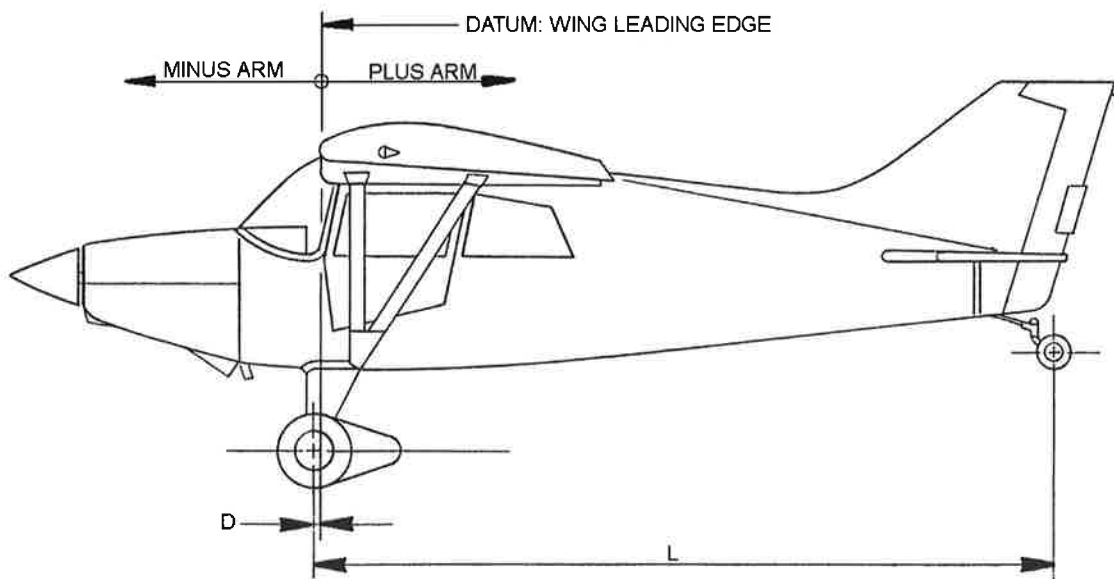
NOTE: Straight line variation between given points

DATUM: Wing leading edge

CERTIFIED BY \_\_\_\_\_ DATE \_\_\_\_\_

MAULE AEROSPACE TECHNOLOGY, INC.  
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**MAULE M-5-235C**

DETAILED CALCULATIONS OF EMPTY WEIGHT AND EMPTY WEIGHT CENTER OF GRAVITY AS DELIVERED FROM FACTORY:



PROCEDURE:

1. Place each of the wheels on a scale with the tailwheel elevated to place the airplane in approximately the flight attitude.
2. Place a level on the leveling mark and leveling lug on the bottom of the right wing near the root. Adjust the height of the tailwheel until the aircraft is level.
3. Measure the following distances:
  - a. Wheel base (**L**) - the horizontal distance from the tailwheel weight point (center of axle) to the main wheel weight point (center of axle).  
 $L = \underline{\hspace{2cm}}$  Inches
  - b. Main Wheel Station (**D**) - the horizontal distance from the main wheel weight point (center of axle) to the datum line.  
 $D = \underline{\hspace{2cm}}$  Inches
4. Measure the weights at the following points:
  - a. **Right Main Wheel**..... =  $\underline{\hspace{2cm}}$  Lbs.
  - b. **Left Main Wheel**..... =  $\underline{\hspace{2cm}}$  Lbs.
  - c. **Tailwheel**, with tare =  $\underline{\hspace{2cm}}$  Lbs., minus tare of  $\underline{\hspace{2cm}}$  Lbs.  
 = net Tailwheel wt. (**T**) of  $\underline{\hspace{2cm}}$  Lbs.

Total Weight as Weighted (**W**) =  $\underline{\hspace{2cm}}$  Lbs.

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The above empty weight includes unusable fuel of 18 lbs. at 24 inches and 12 quarts of oil at minus 34.0 inches for the O-540 engine and 8 quarts of oil at minus 34.0 inches for the IO-540 engine, plus all items of equipment as marked on the accompanying Equipment Lists. The Certificated empty weight is the above weight less 24 lbs. drainable oil for the O-540 engine and 16 lbs. drainable oil for the IO-540 engine at a minus arm of

34 inches and for this airplane is \_\_\_\_\_ lbs. The corresponding empty weight center of gravity is \_\_\_\_\_ inches.

5. Calculations for determining weight, C.G. and moment:

a. Center of Gravity (inches) =  $\frac{L \times T}{W} - D$

i.e., C.G. = \_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_ inches.

b. Moment (inch pounds) =  $W \times C.G.$

i.e., Moment = \_\_\_\_\_ x \_\_\_\_\_ = \_\_\_\_\_ inch lbs.

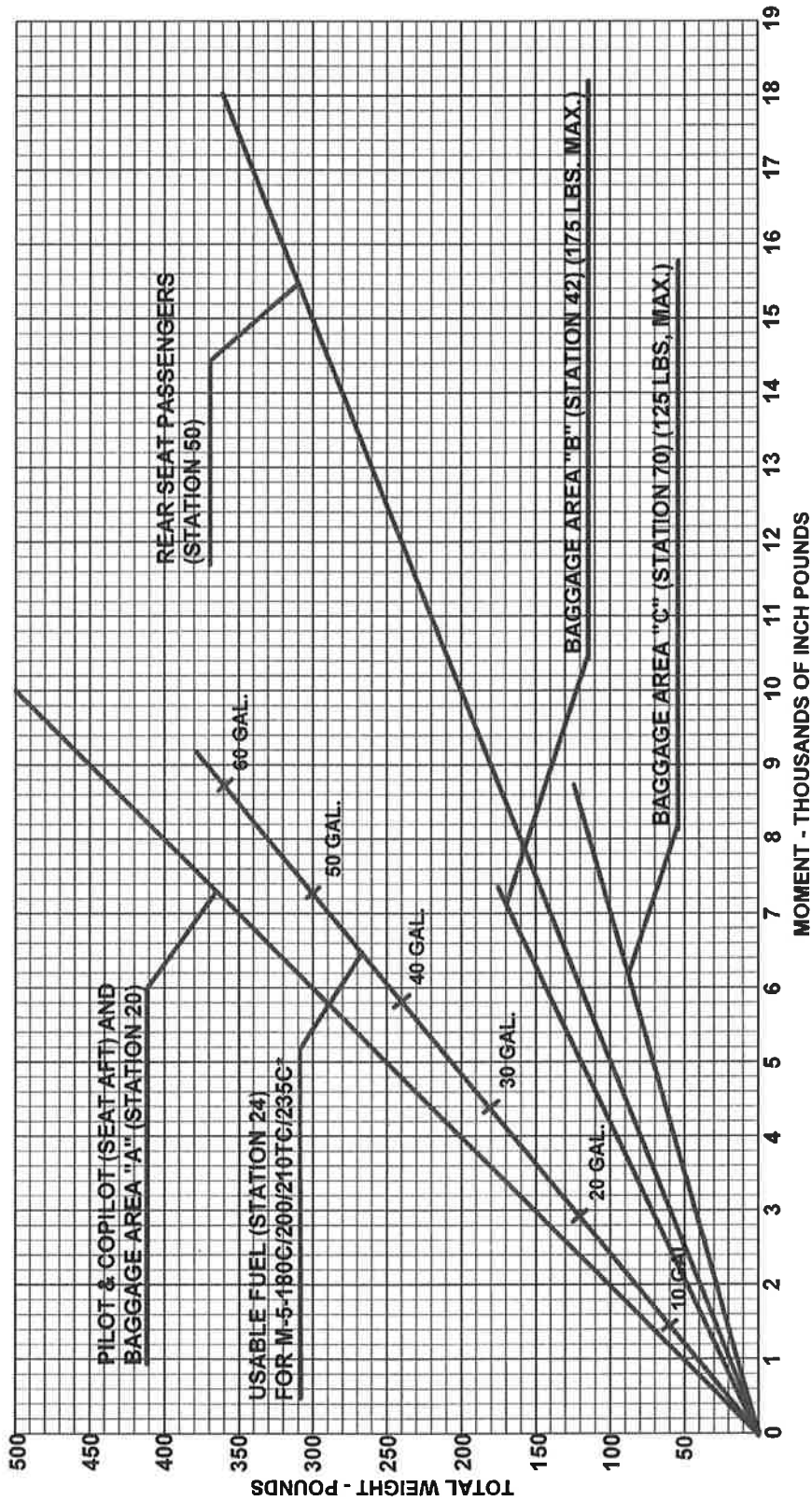
**EXAMPLE OF WEIGHT AND BALANCE CALCULATION FOR LOADED AIRCRAFT:**

An airplane with an empty weight of 1430 lbs. and empty weight C.G. location of 11.0 inches is loaded with a pilot and front seat passenger, fuel and baggage.

Item	Weight, lbs.	C.G. Location	Moment, In.lbs.
Empty Weight (including engine oil)	1430	11.0	15,730
Pilot and Front Passenger	340	*	6,800
Fuel - 40 gal. in Mains	240	*	5,760
Baggage (Area "C")	<u>125</u>	*	<u>8,750</u>
	2135	17.3	37,040

\*Moments can be read directly from the loading graph.

By locating the point corresponding to 2135 lb. aircraft weight and a C.G. Location of 17.3 inches on the Center of Gravity envelope graph, you can see that this point falls within the envelope, signifying the loading is acceptable.



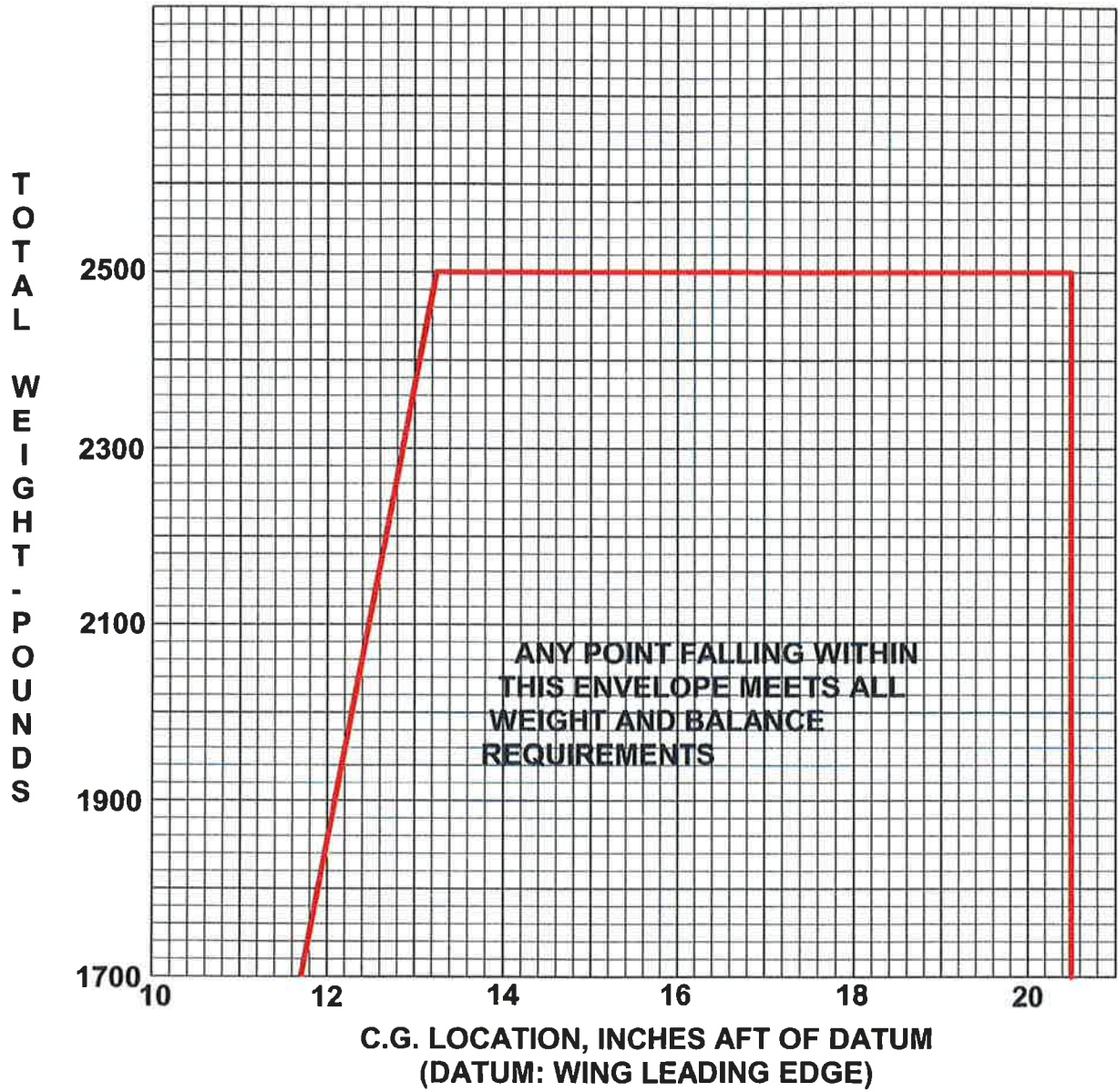
**LOADING CHART**

**PROCEDURE FOR DETERMINING WEIGHT & CENTER OF GRAVITY:**

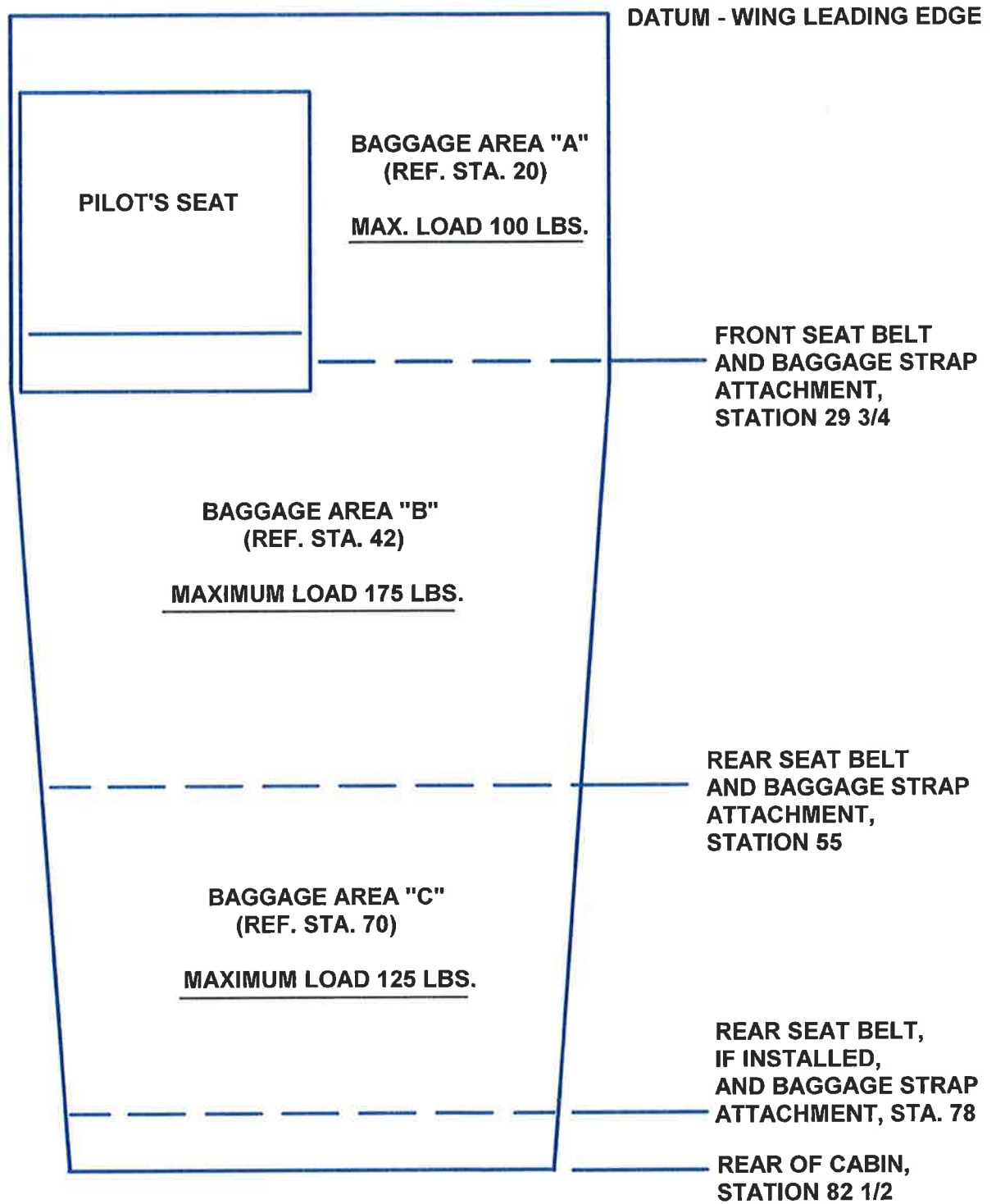
1. Add weight of items to be carried to the basic empty weight of the aircraft.
2. Find moments of items to be carried by using the above loading graph and add these moments to the empty moment of the aircraft. Divide total moment by total weight for aircraft C.G. location.
3. Using the C.G. location from Step 2, find the point on the Weight and Balance Envelope.

\*FOR M-5-210C/220C, USE (STATION 23.3) FOR FINDING USABLE MAIN TANK FUEL MOMENT AND (STATION 22.2) FOR FINDING AUX FUEL TANK MOMENT

**WEIGHT AND BALANCE ENVELOPE**



STRUCTURAL CAPACITY CHART



SERIAL NO. \_\_\_\_\_ REG. NO. \_\_\_\_\_ MODEL \_\_\_\_\_

EQUIPMENT CHANGE - WEIGHT AND BALANCE

ITEM'S (MAKE & MODEL)	WEIGHT	ARM	MOMENTS
Previous Aircraft Empty			

- A. New Empty Weight \_\_\_\_\_ lbs.
- B. New Empty Center of Gravity \_\_\_\_\_ ins.
- C. New Empty Weight C.G. Moment \_\_\_\_\_ in. lbs.
- D. New Useful Load \_\_\_\_\_ lbs.

Supersedes all previous weight and balance data. For aircraft loading see instructions in original weight and balance forms.

BY \_\_\_\_\_ DATE \_\_\_\_\_