

Maule Aircraft Corporation

SPENCE AIR BASE :: MOULTREE, GEORGIA 31768 :: PHONE 912/985-2045



SERVICE LETTER #37

2/25/77

SUBJECT: Aileron Pulley retaining washers.

MODELS AFFECTED: M-5-210C, S/N 6182C thru 6193C M-5-235C, S/N 7024C thru 7079C

COMPLIANCE: Prior to flying the aircraft again.

AUTHORITY: This service letter is FAA approved.

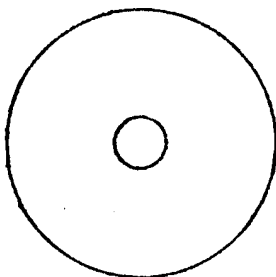
BACKGROUND: The ball-bearing in the large aileron pulleys is press fit into the phenolic pulley body. There is a slight chance that with time the bearing would become loose in the pulley.

A large washer has customarily been placed on the outside of this pulley at installation to prevent the pulley from coming off the shaft if it should become loose on the bearing. There is a possibility that on some aircraft built recently, a small washer was installed in place of this large washer. The small washer would not prevent the pulley from coming off of the shaft if it should work loose on the bearing.

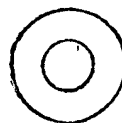
ACTION TO BE TAKEN:

Inspect the forward and aft aileron pulleys on both sides of the fuselage. These are located in the fuselage ceiling at the front and rear front door posts, on both the right and left side. The rear pulleys can be inspected by opening the transverse zipper in the headliner. The forward wing root fairing must be removed to see the forward pulley, and it is best seen from above the leading edge. This pulley will have to be inspected with an inspection mirror.

If an AN970-5 washer (see sketch below) is installed, no further action is required. If an AN960-516 washer is installed (the difference is obvious), you must substitute an AN970-5 washer for it. For your convenience, we are enclosing four AN970-5 washers.



AN970-5
CORRECT



AN960-516
INCORRECT

MAULE AIRCRAFT CORPORATION
SERVICE LETTER #37 COMPLIANCE RECORD

AIRPLANE SERIAL NUMBER _____

AIRPLANE REGISTRATION NUMBER _____

THE FOLLOWING ACTION HAS BEEN TAKEN WITH RESPECT TO THIS SERVICE LETTER:
(CHECK ONE)

I have inspected the four aileron pulleys and found AN970-5 washers installed on my aircraft.

I have substituted AN970-5 washers for the AN960-5 washers originally installed on my aircraft.

I no longer own this airplane. It was sold to:

NAME: _____

ADDRESS: _____

CITY, STATE, ZIP: _____

CERTIFIED BY: _____
(Signature)

NAME: _____
(Print)

TITLE: _____
(Owner, A & P, IA, etc.)

DATE: _____

Return this Compliance Record to:

Maule Air, Inc.
2099 GA Hwy. 133 S.
Moultrie, GA 31788
ATTN: Engineering Records

**MAULE AIRCRAFT CORPORATION
AIRPLANE FLIGHT MANUAL
MAULE M-5-235C**

LOG OF SUPPLEMENTS

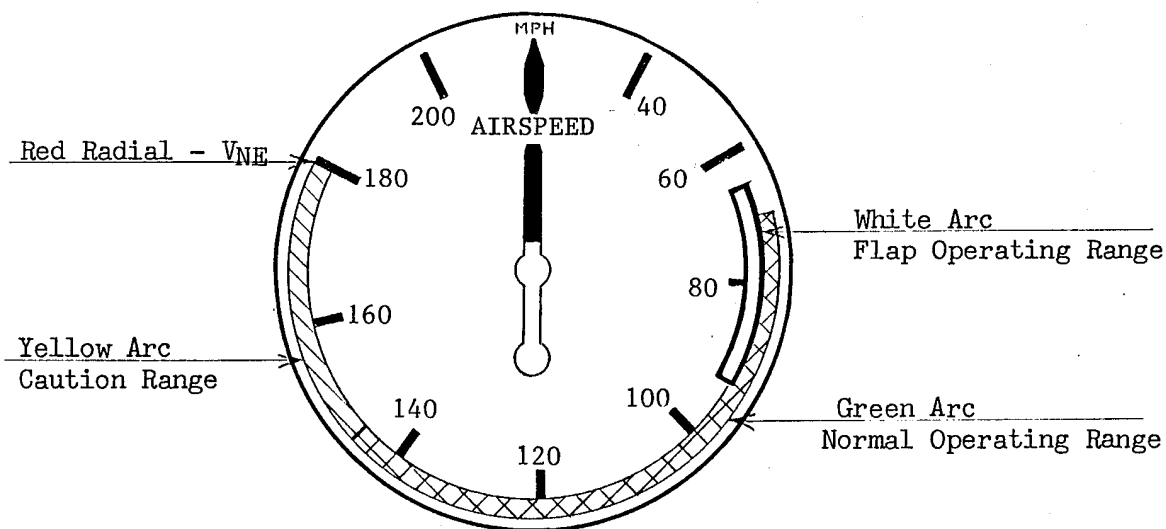
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2
3

SUPP NO.	NO. OF PAGES	DESCRIPTION	APPROVAL DATE
1	3	Installation of FluiDyne C2200H or C3000H Skis.	03/08/77
-	3	Installation of Pee Kay 2300 Floats.	05/10/77
-	4	Installation of Aqua 2400 Floats @2530# GW.	05/27/77
3	2	Installation of EDO 248A2440 or 248B2440 Floats. (07/07/77)	Rev. A 09/07/78
4	3	Installation of Fli-Lite 3000 MK IIIA Skis	06/20/80
5	2	2500# GW Modification. (N/A to AFM, rev. C dated 4/22/81)	09/10/81
6	2	Installation of 20°/40° Flap Ratchet (@2300# GW.	09/10/81
7	2	Installation of FluiDyne A2500A Wheel Replacement Skis.	12/04/81
8	4	Inst. of EDO 797-2500 Amphibious Floats @ 2750# GW per Dwg 9057A. (06/29/82)	Rev. A 12/08/98
9	2	Installation of Hartzell HC-C2YR-1BF/F8468A-3R (81") Propeller.	09/02/82
10	2	Installation of SW Instrument Cluster p/n 436484.	01/03/83
11	2	Installation of 20°/40° Flap Ratchet & 2500# GW Modification. (N/A to AFM, rev. C (4/22/81); use AFMS #6)	04/01/83
12	2	Installation of Lamar Alternator Control System.	07/12/83
13	2	Instructions to drain Main Fuel Tank Sumps at Preflight Inspection	05/05/84
14	2	Inst. of EDO 248B2440 Floats @2750# GW. (F/P per Maule Dwg 9143A only) (09/13/85)	Rev. A 12/08/98
15	3	Installation of Fli-Lite 3000 MK IIIA Skis @2500# GW. (Skiplane per Maule Drawing 9081A only)	04/15/86
16	2	Installation of FluiDyne C3000 (Manually Operated) Skis.	02/01/91
17	2	Inst. of FluiDyne C3000 (Manually Operated) Skis @2500# GW. (Skiplane per Maule Dwg 9158A only)	11/15/91
18	2	Installation of McCauley B2D37C224-B/G-90RA-9 (81") 2 Blade Propeller. (03/05/92)	Rev. B 03/01/96
19	2	Installation of McCauley B3D32C414-C/G-82NDA-2 (80") 3 Blade Propeller. (03/05/92)	Rev. B 03/01/96
20	2	Flight operation with either one (not both) of the Front Doors removed. (06/25/92)	Rev. A 03/01/96
21	2	Installation of Lycoming O-540-B4B5 Engine. (09/12/94)	Rev. A 04/26/96
22	2	Installation of Lycoming O-540-J3A5 or IO-540-WIA5 Engine. (09/12/94)	Rev. A 03/01/96
23	8	Inst. of Aqua 2400 Floats @2750# GW. (F/P per Maule Dwg 9166A only) (03/02/95)	Rev. A 03/30/95
24	2	Inst. of McCauley B3D32C414-[]/[-] 82NDA-2 (80") or -4 (78") Prop (with O-540-B4B5 Engine).	04/26/96
25	2	Operation of airplane when modified per Maule Mod Kit No. 2 (has the expanded Oil Pressure Limits).	10/29/98
-	2	Inst. of 2110X-30 Wing Assemblies with 2167X Main Fuel Tanks – Maule Modification Kit No. 15.	10/08/96
-	4	Installation of Aqua 2200 Floats.	09/18/97
26	2	Installation of Hartzell HC-C2YR-1BF/8477D-6 or HC-C3YR-1RF/F-7693(F)-(-) Propeller (5279F).	Rev. A 04/16/02
27	6	Inst. of S-TEC System 55 Two Axis Autopilot ST-620 (14 volt) - Maule Dwg 9196A, Rev. A or later. (Land)	04/04/00
28	6	Inst. of S-TEC System 55 Two Axis Autopilot ST-620 (14 volt) - Maule Dwg 9196A, Rev. A or later. (Sea)	04/04/00
29	9	Inst. of S-TEC System 50 Two Axis Autopilot ST-418-50 (14v) - Maule Dwg 9193A, Rev. B or later.	01/05/00
30	9	Inst. of S-TEC System 30 Two Axis Autopilot ST-810-30 (14v) - Maule Dwg 9197A, Rev. A or later. (Land)	01/21/00
31	9	Inst. of S-TEC System 30 Two Axis Autopilot ST-810-30 (14v) - Maule Dwg 9197A, Rev. A or later. (Sea)	01/21/00
32	9	Inst. of S-TEC System 20 Single Axis Autopilot ST-810-20 (14v) - Maule Dwg 9197A, Rev. B or later. (Land)	03/20/00
33	9	Inst. of S-TEC System 20 Single Axis Autopilot ST-810-20 (14v) - Maule Dwg 9197A, Rev. B or later. (Sea)	03/20/00
34	6	Installation of FluiDyne C3000H Wheel-Skis @2500# GW - Drawing 9174A, Rev. C or later revision.	01/30/01
35	7	Inst. of S-TEC System 40 Single Axis Autopilot ST-418-40 (14v) - Maule Dwg 9193A, Rev. C or later.	10/29/01
-	5	Installation of Apollo MX20 Multi-Function Display - Maule Drawing 7265A.	08/15/02

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): 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, 70*-145 mph (61*-126K): Extends from flaps up, power off minimum steady flight speed* at 2300 lbs. (V_{S1}) to design cruise speed (V_C).

White Arc - Flap Operating Range, 65*-94 mph (56*-82K): Extends from full flap, power off minimum steady flight speed* at 2300 lbs. (V_{S0}) to the maximum flaps extended speed (V_{FE}).

Note: When loaded to 2300 lbs. at the extreme forward C.G. limit (12.5 in.), the airplane will not stall at an airspeed bleed-off rate of 1 mph per second. Thus a minimum steady flight speed, or the steady-state speed obtained in a glide with the control wheel full aft, is published. At C.G. positions aft of approximately 16 inches a true stall will occur, at 56 mph (49 Knots) with full flaps and at 62 mph (54 Knots) with no flaps.

AIRPLANE FLIGHT MANUAL

MAULE M-5-235C

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 LIMITATIONS:

Engine: Lycoming O-540-J1A5D

Engine Limits: 235 hp @ 2400 RPM, Full Throttle Continuous.

Propeller: Hartzell HC-C2YR-1BF/F8468A-6R.

Fuel: 100/130 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 inches 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, 2050-2400 RPM.
 Red Radial - Maximum RPM, 2400 RPM.



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

AIRPLANE FLIGHT MANUAL

MAULE M-5-235C

MAXIMUM WEIGHT: 2300 Pounds

CENTER OF GRAVITY LIMITS: +12.5 to +20.5 inches @ 2300#

+10.5 to +20.5 inches @ 1700# or less

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

Note: It is the responsibility of the airplane owner and 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.

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



AEROBATICS AND INTENTIONAL SPINS
PROHIBITED.

FLIGHT LOAD FACTORS: FLAPS UP - 3.8g Positive to 1.5g Negative
FLAPS DOWN - 1.9g Positive

FUEL CAPACITY: MAIN TANKS - 21.5 Gal. ea., OPTIONAL AUXILIARY TANKS -
11.5 Gal. ea.

UNUSABLE FUEL: 1.5 Gallons per main tank.



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

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"

AIRPLANE FLIGHT MANUAL

MAULE M-5-235C

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
- 8. Starter Switch..... TWIST FULL RIGHT TO ENGAGE
- 9. After Starting..... CHECK OIL PRESSURE



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

- 9. Alternator switch..... ON
- 10. Anti-collision light..... ON
- 11. Radios and other electricals..... AS REQUIRED
- 12. Parking brake..... OFF



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

ENGINE CHECK:

- 1. Parking brake..... ON, IF DESIRED
- 2. Throttle..... INCREASE TO 2000 RPM
- 3. Magnetos..... SWITCH TO RIGHT, LEFT, BOTH, CHECKING RPM DROPS



A RPM DROP OF MORE THAN 175 RPM OR A DIFFERENCE IN THE DROPS OF MORE THAN 50 RPM IS UNACCEPTABLE.

- 4. Propeller Control..... RETARD FULLY UNTIL RPM DROP IS NOTED. REPEAT.
- 5. Carburetor Heat Control..... PULL ON

WEIGHT AND BALANCE

2

6/5/01 (updated)

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 as delivered from the factory. If the airplane has been altered, refer to the aircraft log and/or aircraft records for this information.

WEIGHT AND BALANCE DATA SUMMARY AS DELIVERED FROM THE FACTORY:

Basic Empty Weight (including engine oil)..... _____ Lbs.
Gross Weight..... 2300 Lbs.
Useful Load..... _____ Lbs.
Empty Center of Gravity..... _____ Inches
Empty Weight Moment..... _____ Inch Lbs.

CENTER OF GRAVITY RANGE:

<u>Center of Gravity Range</u>	<u>At Weight of</u>
+12.5 to +20.5 inches	2300 lbs.
+10.5 to +20.5 inches	1700 lbs.

NOTE: Straight line variation between given points

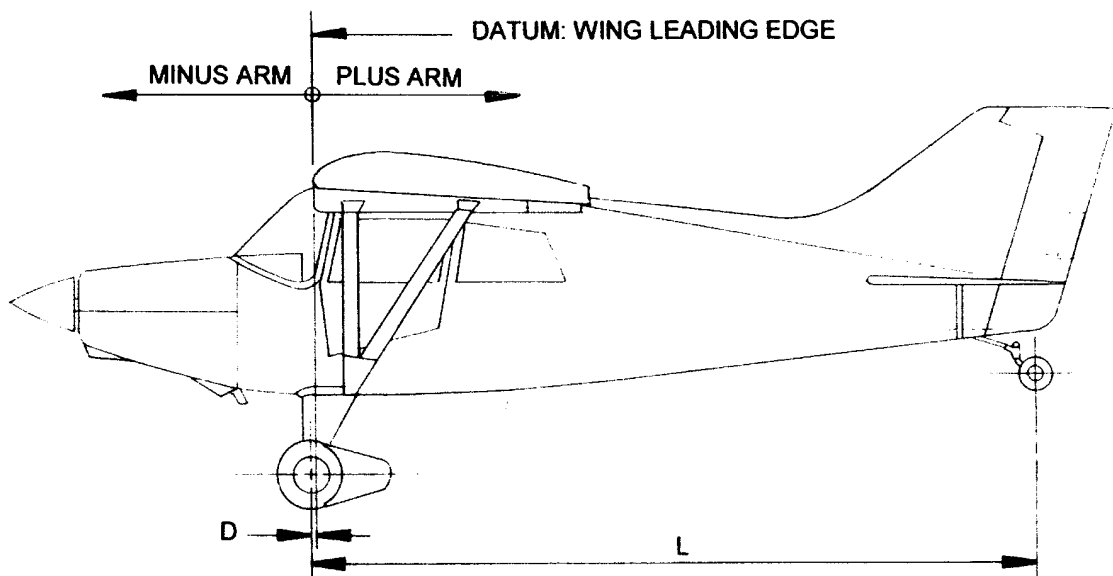
DATUM: Wing leading edge

CERTIFIED BY _____ DATE _____

MAULE **M-5-235C**

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

2
 6/5/01 (updated)



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.

2

6/5/01 (updated)

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 1380 lbs. and empty weight C.G. location of 12.5 inches is loaded with a pilot and front seat passenger, fuel and baggage.

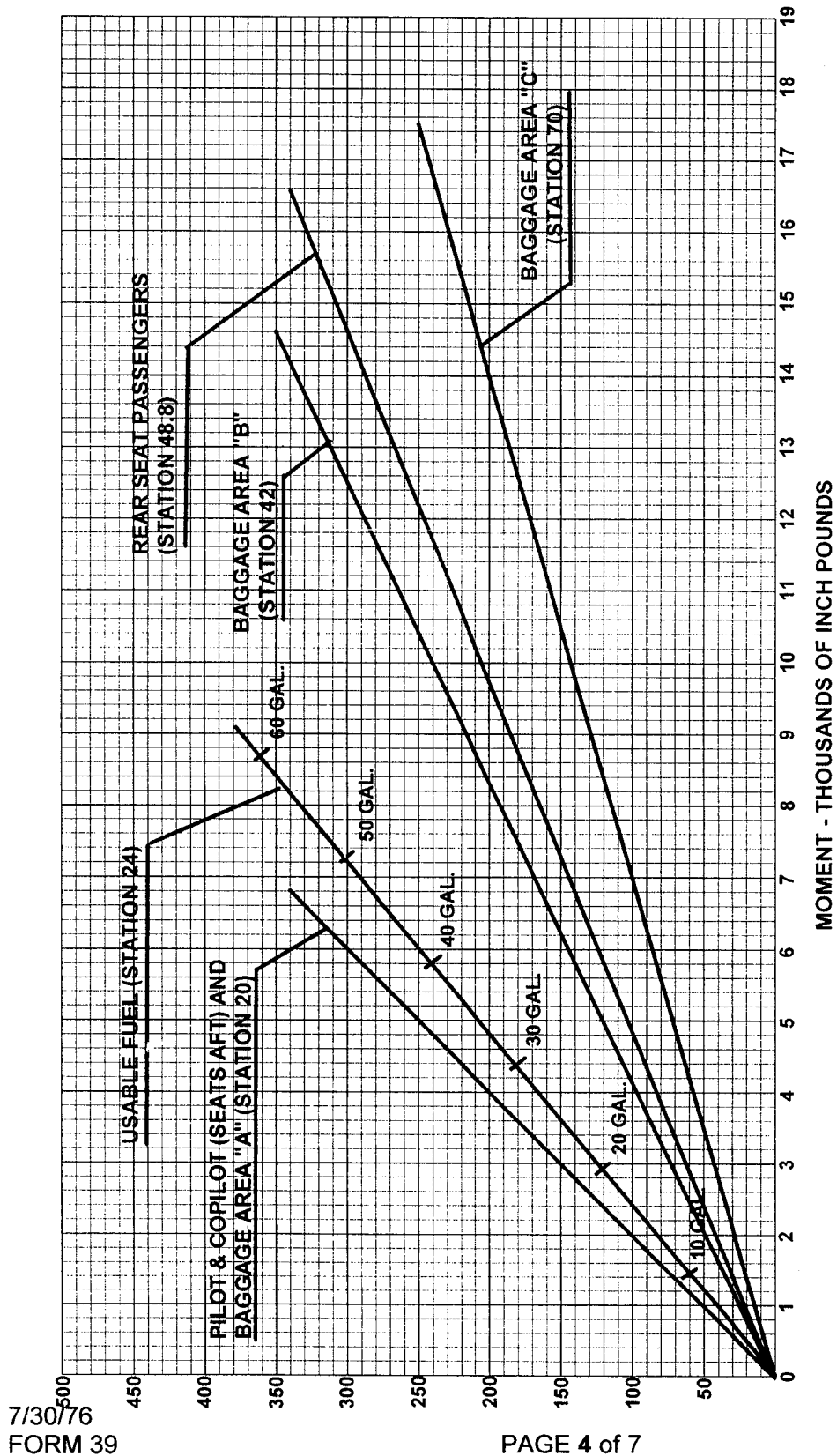
Item	Weight, lbs.	C.G. Location	Moment, In.lbs.
Empty Weight (including engine oil)	1430	11.0	15,730
Pilot and Front Passenger	340	*	5,600
Fuel - 40 gal. in Mains	240	*	5,750
Baggage (Area "C")	<u>150</u>	*	<u>10,500</u>
	2160	17.4	37,580

*Moments can be read directly from the loading graph.

By locating the point corresponding to 2160 lb. aircraft weight and a C.G. Location of 17.4 inches on the Center of Gravity envelope graph, you can see that this point falls within the envelope, signifying the loading is acceptable.

6/5/01 (updated)

2



MOMENT - THOUSANDS OF INCH POUNDS

PROCEDURE FOR DETERMINING WEIGHT & CENTER OF GRAVITY:

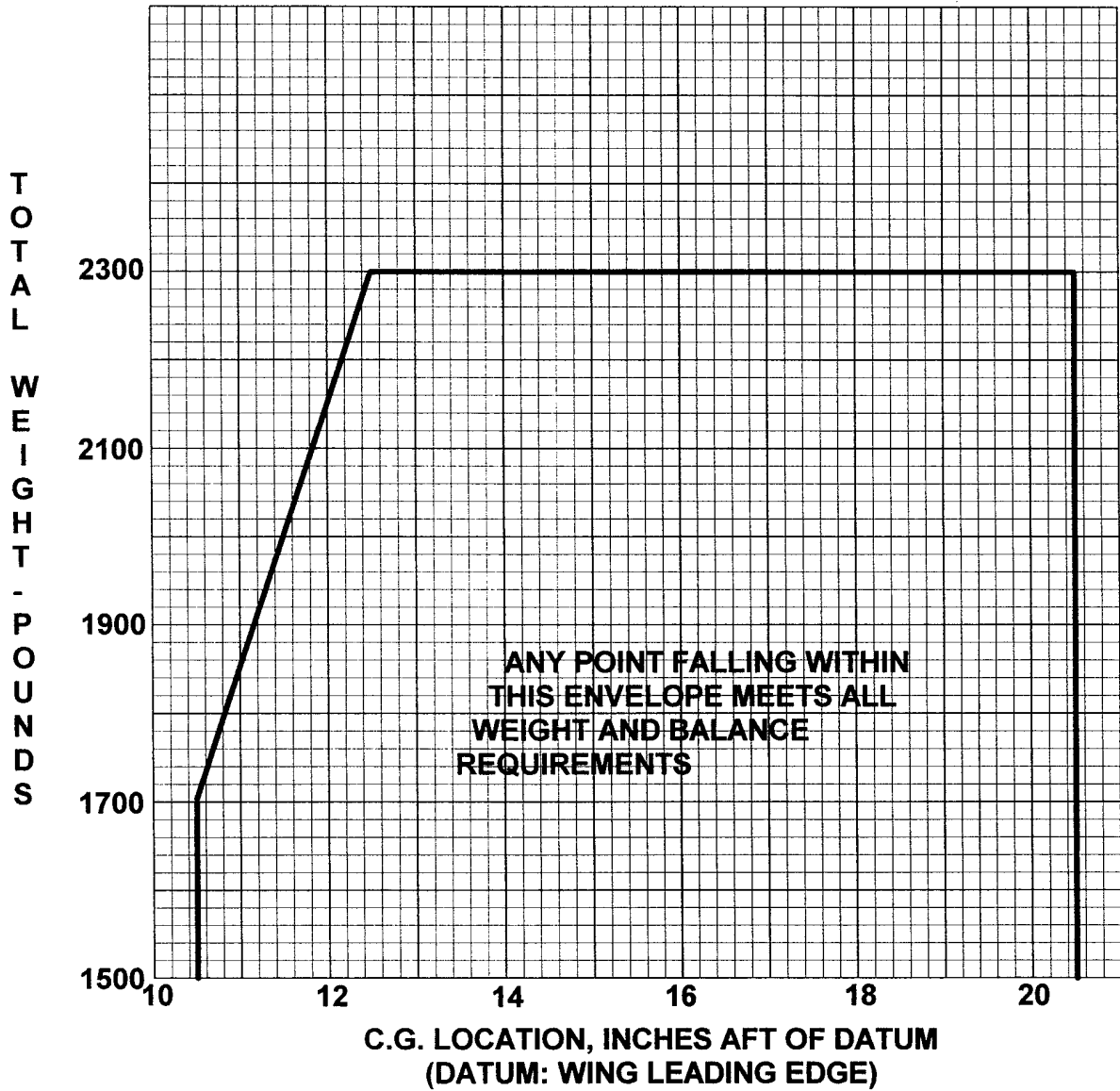
1. Add weight of items to be carried to the basic weight of the aircraft.
2. Find moments of items to be carried by using the above loading graph and add these moments to the basic weight moment of the aircraft.
3. Using the total weight and moment from Step 2, find the point on the center of gravity envelope which corresponds to this total weight and total moment.

LOADING CHART

2

6/5/01 (updated)

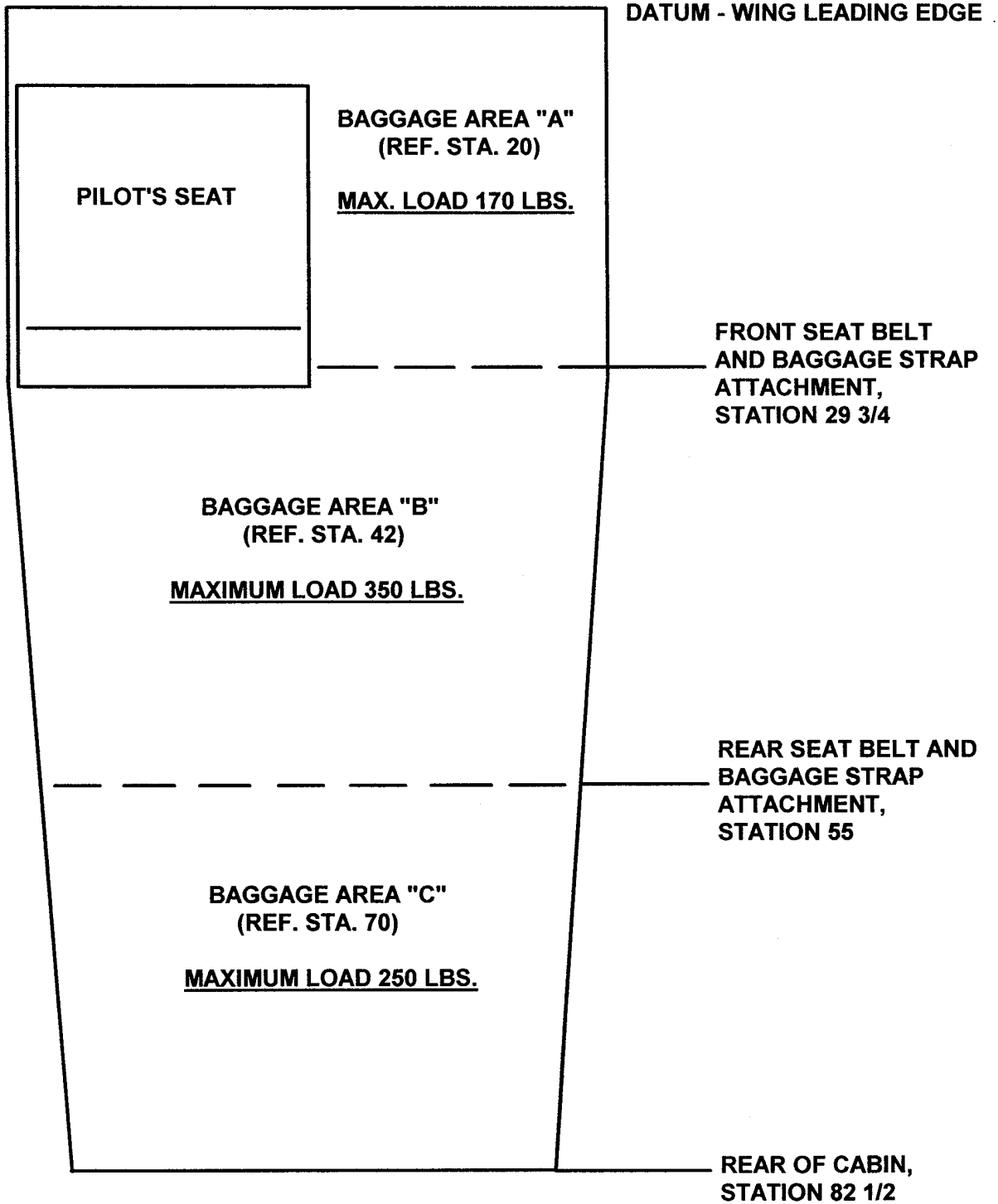
WEIGHT AND BALANCE ENVELOPE



STRUCTURAL CAPACITY CHART

2

6/5/01 (updated)



Maule Aircraft Corporation

SPENCE AIR BASE :: MOULTRIE, GEORGIA 31768 :: PHONE 912/985-2045



FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT NO. 13

FOR

MAULE M-5-235C

Reg. No. _____

Ser. No. _____

This Supplement must be attached to the FAA Approved Airplane Manual dated 6 April 1976 when Quick Drains are installed in the Main Fuel Tanks in accordance with Service Bulletin #5 (considered mandatory).

The information contained herein supersedes OR supplements the information of the basic Airplane Flight Manual; for limitations, procedures and performance information not contained in this Supplement, consult the basic Airplane Flight Manual.

FAA APPROVED: John R. James
MANAGER, ATLANTA AIRCRAFT CERTIFICATION
OFFICE, FAA, CENTRAL REGION

DATE: May 1, 1984

MAULE AIRCRAFT CORPORATION

MOULTRIE, GEORGIA

AFM SUPPLEMENT NO. 13

for M-5-235C

NORMAL OPERATING PROCEDURES

PREFLIGHT INSPECTION:

EXTERIOR:

- 5a. Wing Main Fuel Tank Drain.....DRAIN
- 18a. Wing Main Fuel Tank Drain.....DRAIN