FAA APPROVED

AIRPLANE FLIGHT MANUAL

MAULE AIRCRAFT CORPORATION
JACKSON, MICHIGAN

Model M-4 - 210 Series

(Includes Models M-4-210, M-4-210S, M-4-210C and M-4-210T)

Airplane Serial No._____

FAA Ident. Number_____

(THIS DOCUMENT MUST BE KEPT IN THE AIRPLANE AT ALL TIMES)

APPROVED John W. Hurley
FOR JOHN A. CARRAN, Chief
Engineering & Manufacturing Br.
Central Region

DATE: March 15, 1966

MAULE MODEL M-4-120 SERIES

AIRPLANE FLIGHT MANUAL

LOG OF REVISIONS

Rev. No.	Page Number(s)	Description	Date of Revision	Approved By*
1	3 & 4	Install header tank and fuel system modifications	11/18/64	J. W. Hurley
2	All	Include approval of Models M-4-210, M-4-210S, M-4-210C and M-4-210T airplanes.	3/15/66	J. W. Hurley

* For Chief, Engineering & Manufacturing Branch, Central Region

FAA Approved
Date: 3/15/66

LOG OF SUPPLEMENTS

SUPP. NO.	NO. OF PAGES	DESCRIPTION	APPROVAL DATE
1	1	Flight operation with **Right Rear Door removed** - STC SA258CE. (M-4-210)	09/24/64
2	3	Installation of **Fli-Lite 3000 MK IIIA Skis** - Maule drawing **9079A.** Revised	10/07/65
3	1	Installation of Federal Model **A2000A Skis.** (09/28/64) Revised	10/07/65
(2) -	1	Installation of **Landes-Airglas L-2500A Main Skis.** (STC SA222AL)	12/05/66
(3) 4	2	Installation of Federal Model **C3000H Skis.**	09/20/67
(4) 5	2	Installation of Federal Model **C2200H Skis.**	02/09/68
6	1	Installation of **Fleet** Model **2500 Floats**. *****	07/23/68
-	7	Installation of **CAP** Model **62-2000 Floats.** (Requires Page 3 of Spec. S-14)	11/21/66
7	1	Installation of **EDO** Model **248A2440** or **248B2440 Floats** - Maule STC SA609CE. ***** (11/29/68) Revised	09/19/69
8	2	Operation of aircraft with **Wing Tip Auxiliary Fuel Tanks installed.**	06/04/75
9	1	Installation of Continental IO-360-**D engine - Maule SL#42.** (Applicable to s/n's 1001-1045, 1001C-1085C)	01/15/80
10	2	**Preflight Inspection** added for Airplane Flight Manuals dated 9/24/64 and 3/15/66.	05/01/84
11	2	Flight operation with **Right Rear Passenger Door removed.** (M-4-210C)	09/13/96
12	2	Flight operation with **either one (not both) of the Front Doors removed.** (M-4-210C)	09/13/96
13	4	Operation of aircraft when existing Wing Assemblies, Ailerons, Flaps and Flap Ratchet are **replaced with M-5 Wing Assemblies** 2110X-L/R or 2110X-30, **Ailerons, Flaps and 20°/40° Flap Ratchet** in accordance with Maule **Modification Kit No. 41**.	08/23/01
-	5	Installation of **Apollo MX20 Multi-Function Display** - Maule Drawing 7265A.	08/15/02
-	8	Installation of **GARMIN GNC-420** (GPS/COMM) **System** - Maule Drawing **7251A**.	06/30/03
-	9	Installation of **GARMIN GNS-530** (GPS/NAV/COMM) **System** - Maule Drawing **7253A**.	06/30/03
-	4	Installation of **GARMIN GTX-330 Mode S Transponder Traffic Information System** (TIS) - Maule Drawing **7255A**.	06/30/03
-	3	Operation of aircraft when Micro AeroDynamics **Vortex Generator System** is installed per Maule Drawing **9177A**.	12/16/05

*****For s/n's 1001-1035 with Maule SL#7 and #15 complied with; 1036-1045, 1001C-1074C, 1079C, 1080C with SL#15 complied with and 1075C-1078C, 1081C-1117C.

MAULE MODEL M-4 - 210 SERIES

AIRPLANE FLIGHT MANUAL

TABLE OF CONTENTS

FAA APPROVED
DATE: 3/15/66

MAULE MODEL M-4-210

AIRPLANE FLIGHT MANUAL

I. LIMITATIONS

The following limitations must be observed in the operation of this airplane:

A.	Engine	Continental Model IO-360A
B.	Engine Limits	Take Off (5 Min) 2800 RPM (210 HP) METO POWER 2800 RPM @ 26.5Hg (195 HP)
C.	Fuel	100/130 Minimum Grade Aviation Gasoline
D.	Propellers	McCauley D2A3467/76C-2
E.	Power Plant Instruments:	
	*Cylinder Head Temp	Green Arc: 100° F-460°F (Normal Operating Range) Red Radial: 460°F
	Manifold Pressure	Green Arc: 14.5-26.5 In Hg (Normal Operating Range) Yellow Arc (Caution) 26.6-29.0" Hg Red Radial 29.0 In Hg
	Oil Temperature	Green Arc: 75-225°F (Normal Operating Range) Yellow Arc (Caution): Below 75°F Red Radial: 225°F
	Oil Pressure	Green Arc: 30-60 psi (Normal Operating Range) Yellow Arc (Caution), 10-30 psi Red Radials: 10 and 60 psi
	Tachometer	Green Arc: 1800-2800 RPM (Normal Operating Range) Red Radial: 2800 RPM

*NOTE This instrument is optional.

FAA APPROVED
DATE: 3/15/66

F. Airspeed Limits: (Calibrated Airspeed)

Never Exceed (VNE)	180 mph (156K) (Red Radial)
Caution Range	145-180 mph (126-156K) (Yellow Arc)
Design Cruising Speed (VC)	145 mph (126K)
Normal Operating Range	60-145 mph (52-126K) (Green Arc)
Max. Design Maneuvering Speed(VP)	125 mph (109K)
Max. Flap Extension Speed (VP)	90 mph (82K)
Flap Operating Range	53-90 mph (46-82K) (White Arc)

NOTE: Airspeed Instrument Markings and their Significance:

1. Radial RED line marks the never exceed speed, which is the maximum safe airspeed.

2. YELLOW Arc on indicator denotes range of speeds in which operations should be conducted with caution and only in smooth air.

3. GREEN Arc denotes normal operating speed range.

4. WHITE Arc denotes speed range in which flaps may be safely lowered.

G. Maneuvers: Normal Category maneuvers only are approved.

H. Flight Load Factors: (At max. gross weight of 2100 lbs.)

Maneuver: Positive: 3.8g Negative: 1.5g
Flaps Extended: 1.9g

WARNING: Use controls with caution above 125 mph (109K) CAS.

I. Maximum Weight 2100 lbs.

J. Center of Gravity Limits.....(+15.0) to (+23.0) at 2100 lbs.
(+11.0) to (+23.0) at 1400 lbs. 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.

FAA APPROVED
DATE: 3/15/66

K. Placards:

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

"NO ACROBATIC MANEUVERS INCLUDING SPINS APPROVED."

"ROUGH AIR OR MANEUVERING SPEED: 125 MPH (109K)"

"TAKE OFF WITH 15° FLAPS"

Types of Operation Authorized:

One of the following placards is required depending on equipment installed. (See FAR 91).

"THIS AIRCRAFT APPROVED FOR DAY VFR FLIGHT ONLY" or,

"THIS AIRCRAFT APPROVED FOR DAY OR NIGHT VFR FLIGHT" or,

"THIS AIRCRAFT APPROVED FOR DAY OR NIGHT VFR OR IFR FLIGHT".

L. Warning: Flight into icing conditions not approved.

M. Fuel System Operation

"TAKE OFF AND LAND ON FULLEST MAIN TANK."

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

II. PROCEDURES

A. Normal Procedures

1. Wing Flap Settings:

Takeoff	15° (First Notch)
Cruise	0° (Full Up-Retracted)
Landing	35° (Second Notch)

2. Stall Warning Indicator:
The electric stall warning system will light a red light on the instrument panel at approximately seven mph above the stalling speed. It will be inoperative when the master switch is off.

3. Maximum 90° crosswind velocity demonstrated: 20 mph

4. Anti-Collision Beacon
WARNING: Anti-collision light may cause adverse effect on pilot when flying in overcast or haze. Recommend it be turned off under these conditions.

FAA APPROVED
DATE: 3/15/66

B. Emergency Procedures:

1. Air Restart
   Use primer pump for engine restart.

2. Engine Failure
   Use 15° flap setting (first notch), maintain 85 mph (78K) CAS. If air restart is not possible, cut ignition and master switches. Execute forced landing.

3. Engine Fire
   Turn fuel valve OFF.
   Open throttle to full ON position.
   Turn ignition switch OFF.

FAA APPROVED
DATE: 3/15/66

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

FAA APPROVED

AIRPLANE FLIGHT MANUAL SUPPLEMENT NO. 10

FOR

Models M-4-210, M-4-210S,
M-4-210T and M-4-210C

Reg. No._____

Ser. No._____

This Supplement must be attached to the FAA Approved Airplane Flight Manual dated 24 September 1964 or 15 March 1966 when Quick Drains are installed in the Main and Auxiliary Fuel Tanks in accordance with Maule Service Letter No. 32 and Service Bulletin No. 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

II PROCEDURES

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 & 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. Pitot tube.....REMOVE COVER
11. Stall Warning Switch.....CHECK FOR FREEDOM OF MOVEMENT
12. Main Fuel Tank.....VISUALLY CHECK QUANTITY
13. Left Landing Gear.....CHECK TIRE INFLATION AND BRAKE LINE SECURITY
14. Bottom left side of cowl.....DRAIN GASCOLATOR (1)
15. Top Cowl; Oil access door.....CHECK OIL QUANTITY
16. Propeller.....CHECK LEADING EDGE FOR DAMAGE
17. Air inlets.....CHECK FOR FOREIGN OBJECTS, INSPECT VISIBLE CONNECTIONS AND COMPONENTS
18. Right landing gear.....CHECK TIRE INFLATION AND BRAKE LINE SECURITY
19. Right wing and controls.....INSPECT SAME AS LEFT WING
20. Wing Main & Aux Fuel Tank Drains.....DRAIN (2)
21. Right fuselage side and top.....INSPECT FOR WRINKLES AS INDICATION OF INTERNAL DAMAGE
22. Static port.....CLEAR
23. Right Stabilizer.....CHECK ATTACHMENT POINTS AND STRUT
24. Right Elevator.....CHECK HINGE POINTS
25. Rudder.....CHECK HINGE POINTS, CONTROL ATTACHMENTS AND NAV. LIGHT
26. Tailwheel.....CHECK INFLATION, ATTACHMENTS, REMOVE TIEDOWNS
27. Left Elevator.....CHECK TAB CONTROLS AND ALL HINGE POINTS
28. Left Stabilizer.....CHECK ATTACHMENT AND STRUT
29. Left Fuselage side and bottom.....CHECK FOR WRINKLES AS INDICATION OF INTERNAL DAMAGE
30. Left side Static port.....CLEAR

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

1

2

WEIGHT AND BALANCE DATA SUMMARY AS DELIVERED FROM THE FACTORY:

Basic Empty Weight (including engine oil)..... _____ Lbs.

Gross Weight..... 2100 Lbs.

Useful Load..... _____ Lbs.

Empty Center of Gravity..... _____ Inches

Empty Weight Moment..... _____ Inch Lbs.

CENTER OF GRAVITY RANGE:

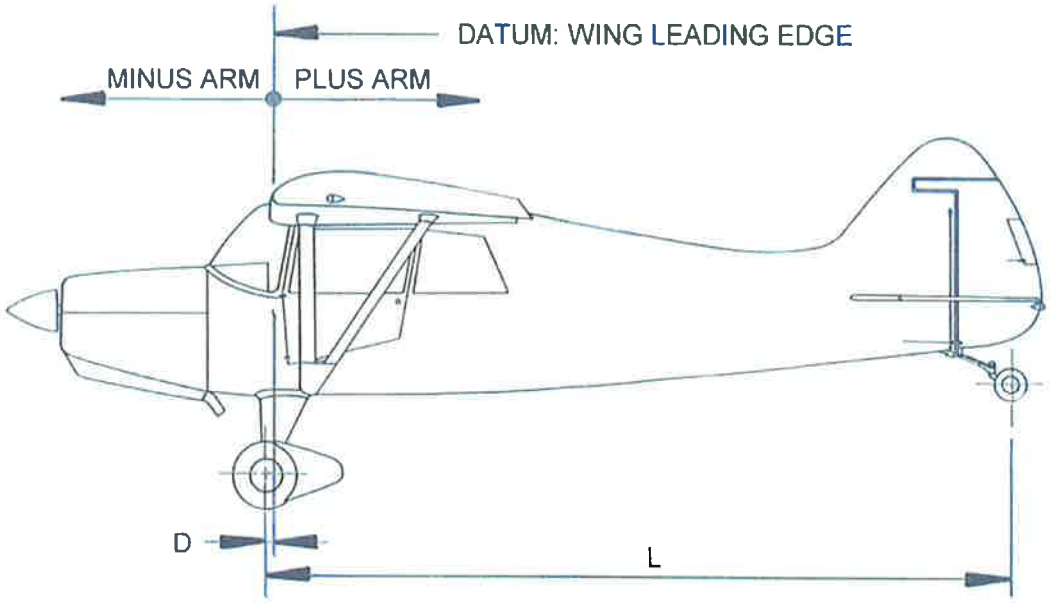
Center of Gravity Range	At Weight of
+15.0 to +23.0 inches	*2100 lbs.*
+11.0 to +23.0 inches	*1400 lbs. or less*

NOTE: Straight line variation between given points
DATUM: Wing leading edge

NOTE: Center of Gravity Range for Skiplane with Fli-Lite 3000 MK IIIA or Federal A2000A skis is same as landplane. Skiplane empty weight and center of gravity will be done with the skis in the wheel position.

CERTIFIED BY_____ DATE_____

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



1

2

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 = _____ Inches

   b. Main Wheel Station (**D**) - the horizontal distance from the main wheel weight point (center of axle) to the datum line.
   D = _____ Inches

4. Measure the weights at the following points:

   a. **Right** Main Wheel.....= _____ Lbs.

   b. **Left** Main Wheel.....= _____ Lbs.

   c. **Tailwheel,** with tare =_____Lbs., minus tare of _____ Lbs.

   = net Tailwheel wt. **(T)** of _____ Lbs.

   Total Weight as Weighted **(W)** = _____ Lbs.

The above empty weight includes unusable fuel of 18 lbs. at 24 inches and 10 quarts of oil at minus 37 inches, plus all items of equipment as marked on the accompanying Equipment Lists. The certificated empty weight is the above weight less 12.5 lbs.

drainable oil at a minus arm of 37 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) = $\frac{\mathbf{L \times T}}{\mathbf{W}} - \mathbf{D}$

      i.e., C.G. = _____ - _____ = _____inches.

   b. Moment (inch pounds) = **W** x C.G.

      i.e., Moment = _____ x _____ = _____inch lbs.

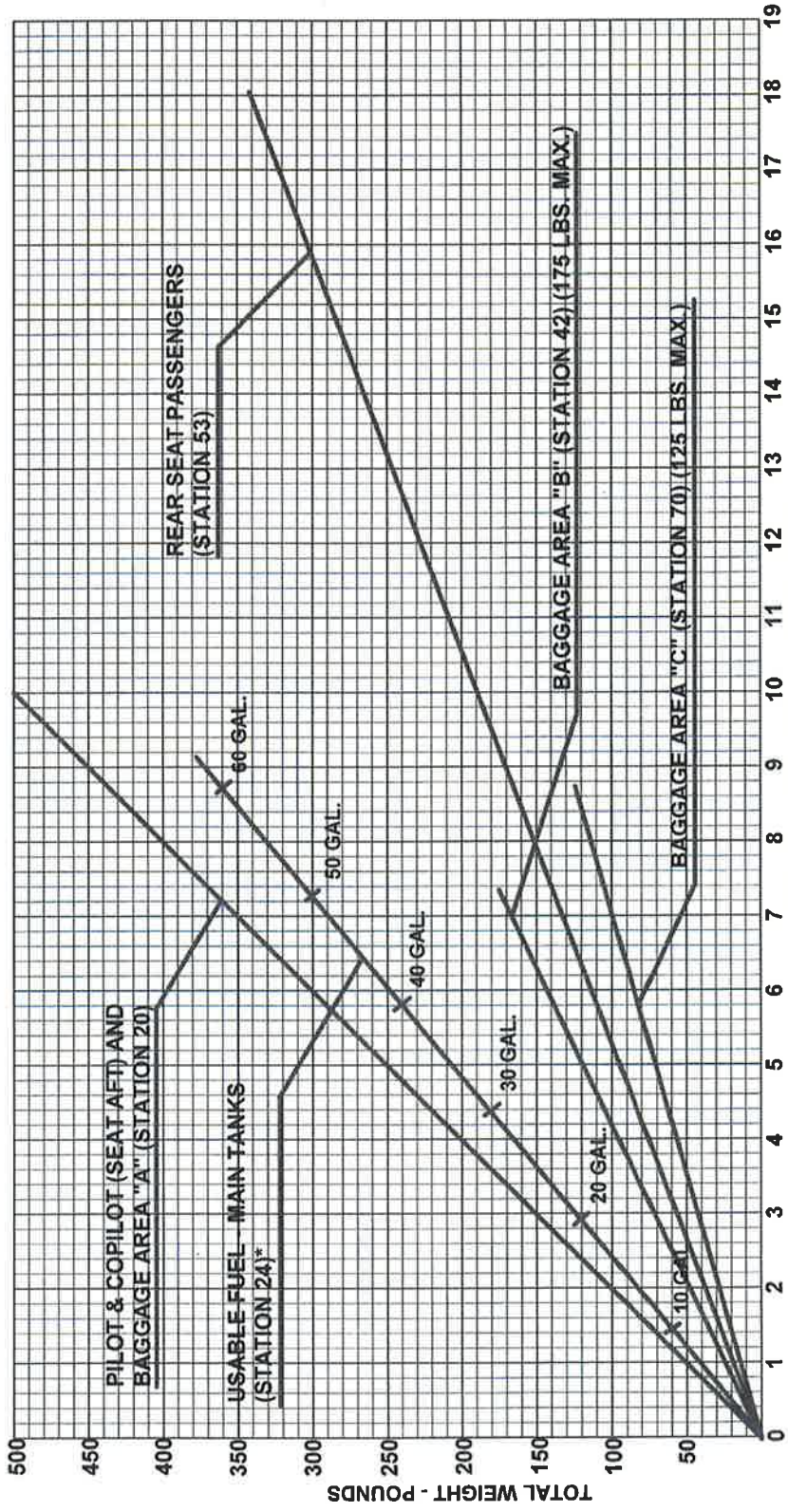
EXAMPLE OF WEIGHT AND BALANCE CALCULATION FOR LOADED AIRCRAFT:

An airplane with an empty weight of 1147 lbs. and empty weight C.G. location of 11.2 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)	1147	11.2	12,846
Pilot and Front Passenger	340	*	6,800
Fuel - 40 gal. in Mains	240	*	5,760
Baggage (Area "B")	50	*	3,500
	1777	16.3	28,906

*Moments can be read directly from the loading graph.

By locating the point corresponding to 1777 lb. aircraft weight and a C.G. Location of 16.3 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

*USE (STATION 22.2) FOR FINDING AUX TANK USABLE FUEL MOMENT

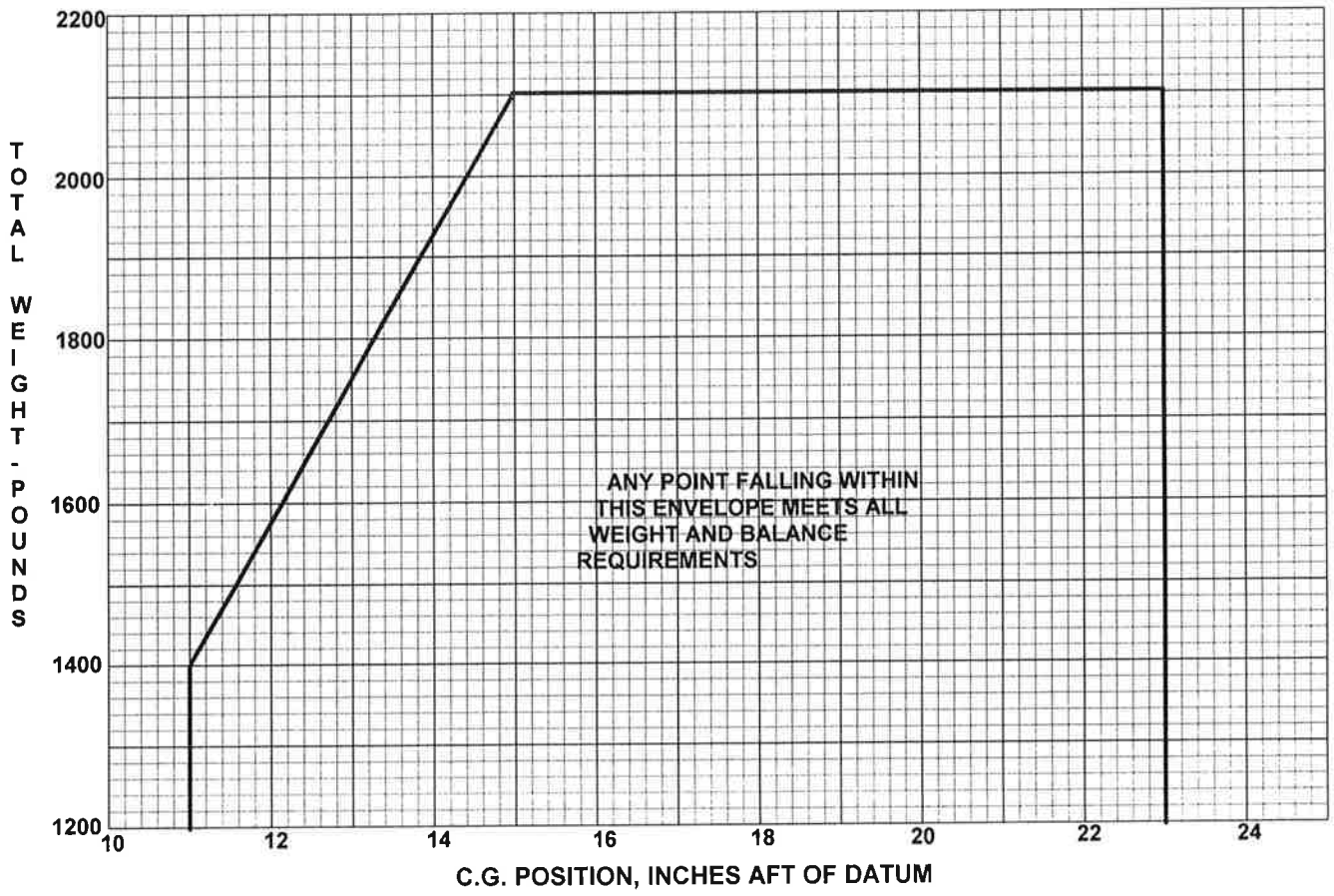
PROCEDURE FOR DETERMINING WEIGHT & CENTER OF GRAVITY:

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.**

WEIGHT AND BALANCE ENVELOPE

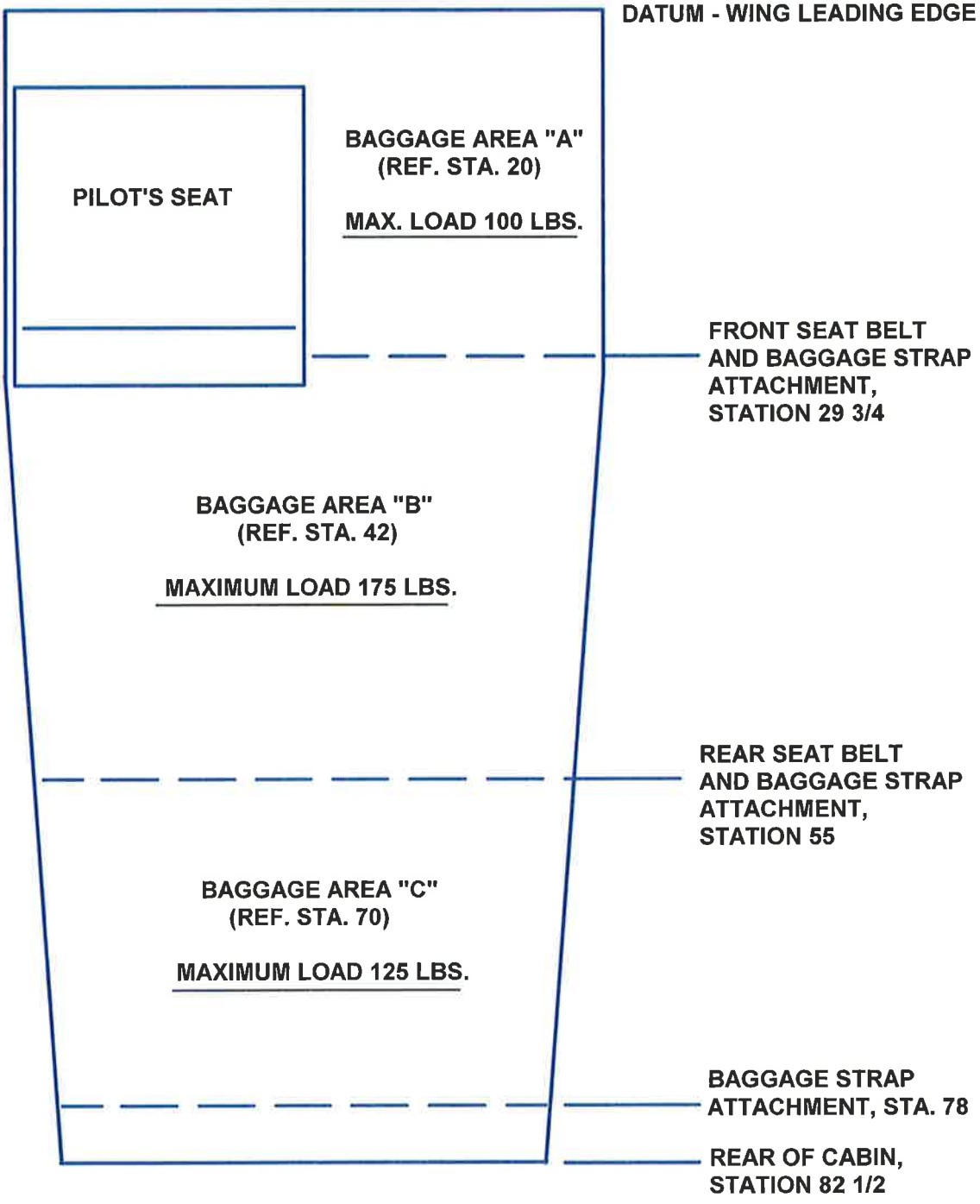
1

2



(DATUM: WING LEADING EDGE)

STRUCTURAL CAPACITY CHART



SERIAL NO._____REG.NO._____MODEL_____

EQUIPMENT CHANGE - WEIGHT AND BALANCE

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

1

2

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_____