

3.3 NORMAL FLIGHT OPERATIONS: (Cont'd)

D. RUDDER TRIM:

NOTE: To assure full effectiveness of the Right Rudder Trim:

Unlock "T" handle (1/2 turn left), depress right rudder as you pull "T" handle full out. Lock "T" handle 1/2 turn right before releasing right rudder pressure. If too much trim, move handle in until trim is correct and then lock.

E. STALLS:

Stalls are preceded by mild 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 300 feet.

//////////////////// THE STALL WARNING LIGHT IN INOPERATIVE WHEN
////CAUTION//// THE BATTERY SWITCH IS OFF.
////////////////////

F. CROSSWIND LANDINGS & TAKEOFFS:

Maximum demonstrated crosswind component is 14 mph and flap extension should be limited to 0° (one notch) or -7° with such crosswind or higher. 14 mph is the maximum demonstrated for certification of the airplane and is not considered limiting with flaps at 0°.

G. 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. Auxiliary (outboard) tanks 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 0.4 gallons per minute or approximately 45 minutes 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 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 illumination of the transfer pump switch, an increase in the respective main tank fuel gauge indicator, and a decrease on the respective auxiliary tank indicator.

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SECTION IV

EMERGENCY PROCEDURES

4.1 EMERGENCY BASIC RULES:

To assist the pilot when an emergency occurs, three basic rules are established which apply to most emergencies occurring while airborne. They should be remembered by each aircrew member.

1. Maintain aircraft control
2. Analyze the situation and take proper action
3. Land as soon as conditions permit

4.2 ENGINE EMERGENCY SHUTDOWN:

1. Mixture - Full lean
2. Fuel Selector - Off
3. Ignition Switch - Off

4.3 ENGINE FIRE DURING STARTING:

1. Mixture - Full lean
2. Throttle - Open
3. Continue cranking for several revolutions. Attempt to draw fire inside engine.
4. Accomplish ENGINE EMERGENCY SHUTDOWN if fire continues.

4.4 ENGINE FIRE AFTER STARTING:

1. Accomplish ENGINE EMERGENCY SHUTDOWN
2. Master Switch - Off

4.5 EMERGENCY EXIT ON THE GROUND:

1. Accomplish ENGINE EMERGENCY SHUTDOWN
2. Master Switch - Off
3. Leave aircraft by either door or kick out side window panels or baggage door.

4.6 TAKEOFF ABORT: (BEFORE LIFTOFF)

1. Throttle - Closed
2. Brakes - As Required

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4.7 ENGINE FAILURE AFTER TAKEOFF OR FORCED LANDING:

1. Glide - Establish 83 mph IAS with flaps at 0°
2. Switch Fuel Selector to fullest tank
3. Electric Fuel Pump - On
4. Mixture Rich, Ignition On
5. Carburetor Air Control - Pull Hot
6. If engine does not restart, accomplish EMERGENCY SHUTDOWN
7. Wing Flaps - As Required
8. Master Switch - Off

4.8 PARTIAL POWER FAILURE DURING FLIGHT OR AFTER TAKEOFF:

1. Mixture - Rich
2. Carburetor Air Control - Pull Hot
3. Airspeed - Glide at 83 mph IAS if unable to maintain level flight
4. Fuel Selector - Both
5. Electric Fuel Pump - On
6. Ignition Switch - Both
7. Master Switch - On

4.9 COMPLETE POWER FAILURE DURING FLIGHT:

1. Glide - Establish 83 mph
2. Attempt engine airstart if warranted

4.10 ENGINE AIRSTART:

1. Fuel Selector - Both
2. Electric Fuel Pump - On
3. Mixture - Rich
4. Ignition Switch - Both (start if propeller is not turning)
5. Auxiliary Fuel Tank pump switch - On for tank feeding engine if Auxiliary tank has fuel.
6. If engine does not start, try flooded engine clearing procedure with throttle wide open and mixture full lean.
7. If no start, make forced landing

NOTE: PROPELLER WILL NOT WINDMILL BELOW 73 MPH.

NOTE: AT ALTITUDES OVER 8000 FEET, A LEANER MIXTURE MAY BE REQUIRED.

4.11 ELECTRICAL FIRE:

1. Master Switch - Off

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4.12 ENGINE FIRE DURING FLIGHT:

1. Accomplish ENGINE EMERGENCY SHUTDOWN
2. Make forced landing

4.13 SMOKE AND FUME ELIMINATION:

1. Cabin Heat Knob - In
2. Cabin Air Knob - In
3. Upper Air Vents - Open
4. Pilot's Window - Open (below 124 mph)

4.14 STRUCTURAL DAMAGE:

1. On Takeoff - Abort
2. In flight, maintain controllable airspeed
3. Climb to safe stall recovery altitude
4. Notify appropriate controlling agency, if appropriate.
5. Determine control difficulty airspeed by slowing down while flying straight ahead. Do not allow the aircraft to stall.
6. Make full stop landing using 5-10 mph above difficulty airspeed or above normal approach speed, whichever is higher.

4.15 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 and reduce power to idle. When the rotation stops, neutralize the rudder and elevator, 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.

4.16 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 and/or red "ALTERNATOR OFF WARNING" light is illuminated, 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.

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SECTION V

5.1 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.

WEIGHT AND BALANCE DATA SUMMARY AS DELIVERED FROM THE FACTORY:

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

CENTER OF GRAVITY RANGE:

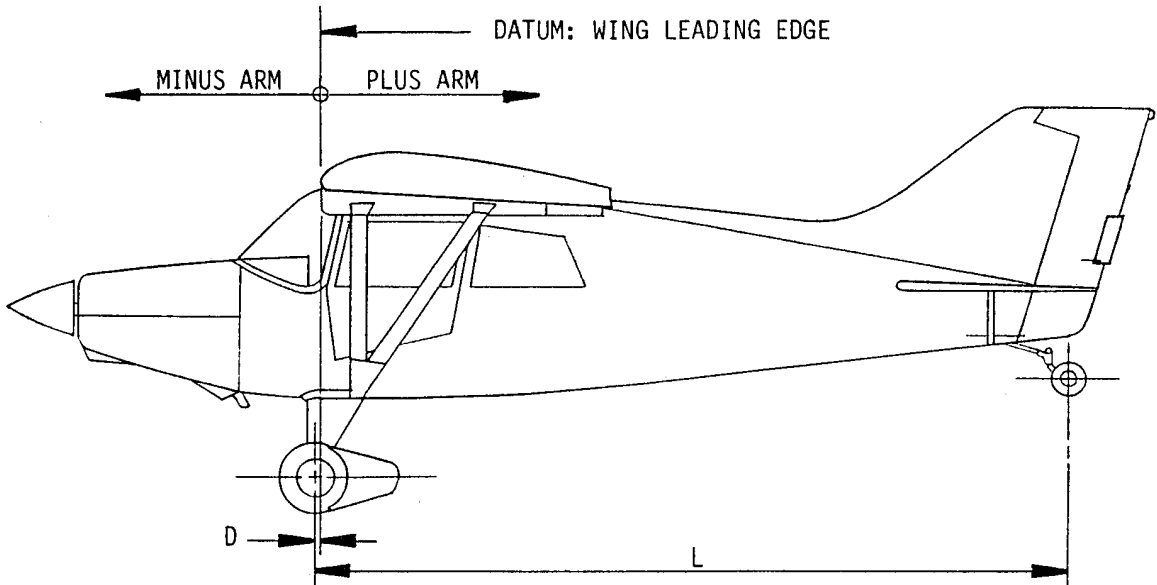
<u>At Weight of</u>	<u>Center of Gravity Range</u>
2500 lbs.	+16.7 to +20.5 inches
1600 lbs. or less	+13.6 to +20.5 inches

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

CERTIFIED BY _____ DATE _____

5.1 **WEIGHT AND BALANCE:** (Cont'd)

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**..... = 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.

5.1 WEIGHT AND BALANCE: (Cont'd)

The above empty weight includes unusable fuel of ** lbs. at 24 inches and 8 qts. of oil at minus 36.5 inches, plus all items of equipment as marked on the accompanying Equipment Lists. The Certificated empty weight is the above weight less 16 lbs. drainable oil at a minus arm of 36.5 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:

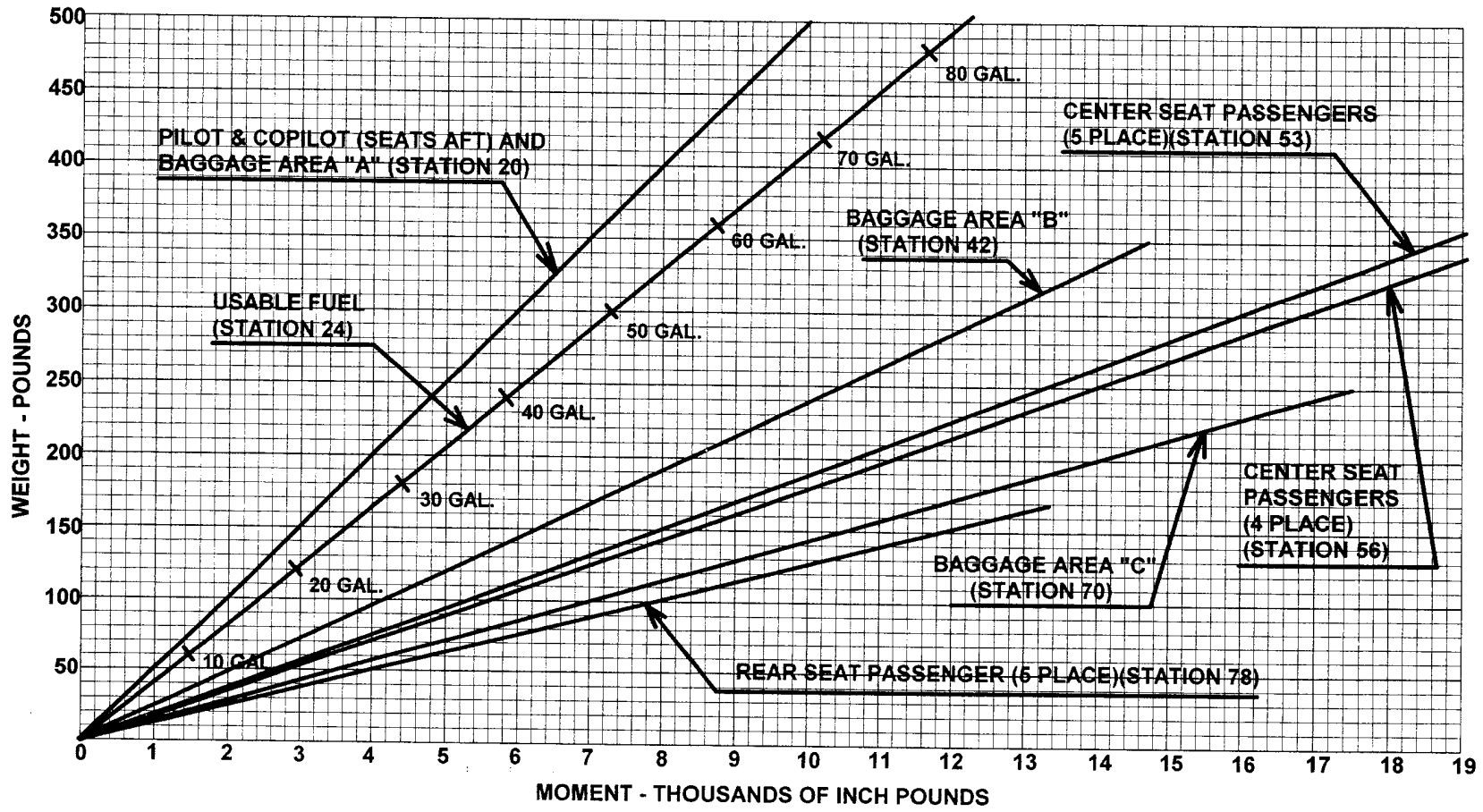
An airplane with an empty weight of 1383 lbs. and an empty weight moment of 17,288 inch lbs. is loaded with a pilot and front seat passenger, fuel and 150 lbs. of baggage.

Item	Weight, lbs.	Arm, Ins.	Moment, In.lbs.
Empty Weight (including engine oil)	1383	12.5	17,288
Pilot and Front Passenger	340	*	6,800
Fuel - 40 gal. in Mains	240	*	5,760
Baggage (Area "C")	150	*	10,500
	<u>2113</u>		<u>40,348</u>

By locating the point corresponding to 2113 lb. aircraft weight and 40,348 inch lbs. total moment on the Center of Gravity envelope graph, you can see that this point falls within the envelope, signifying the loading is acceptable.

* Moments can be read directly from the loading graph.

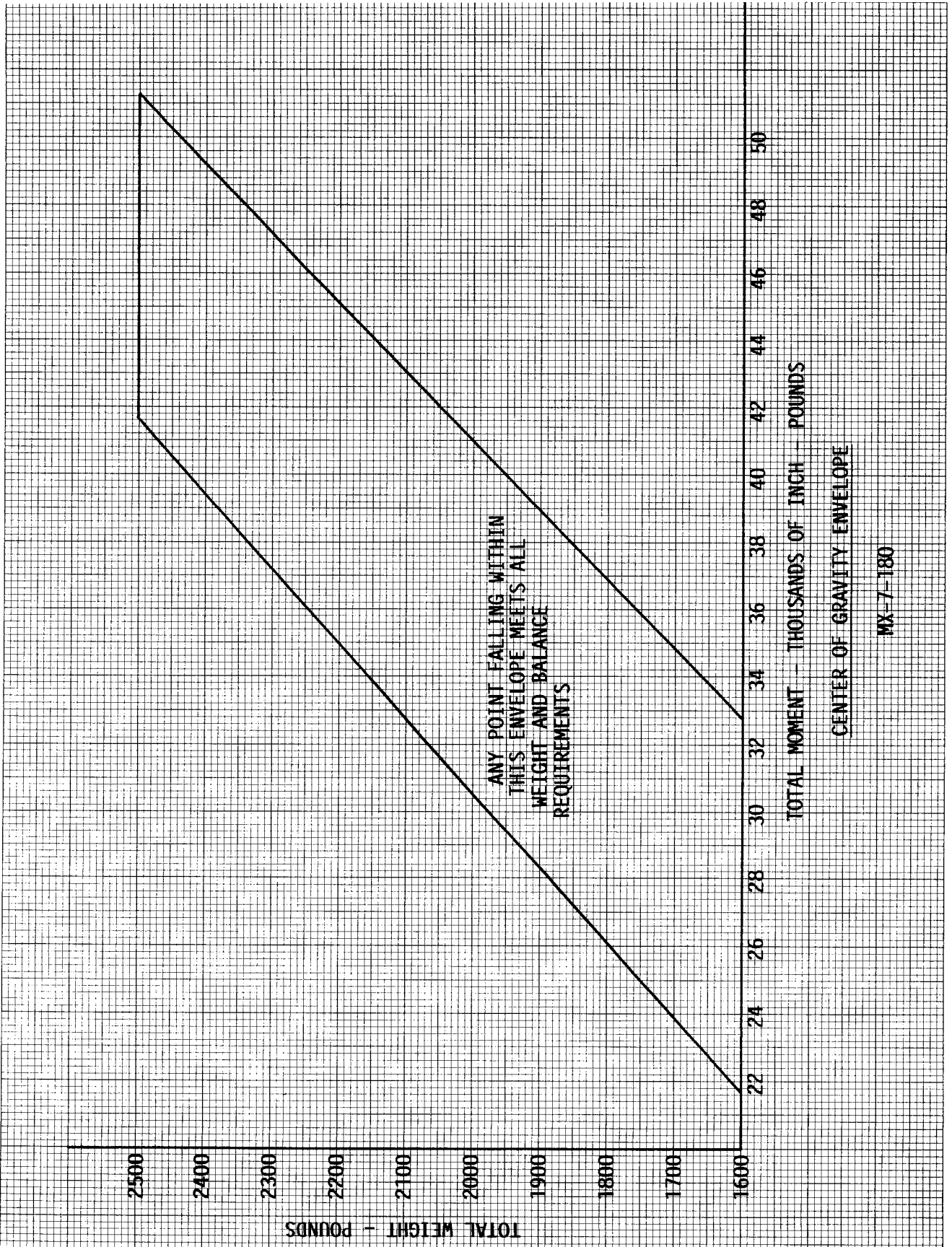
** Use 18 lbs. for "A" Tank configuration and 27.6 lbs. for "C".

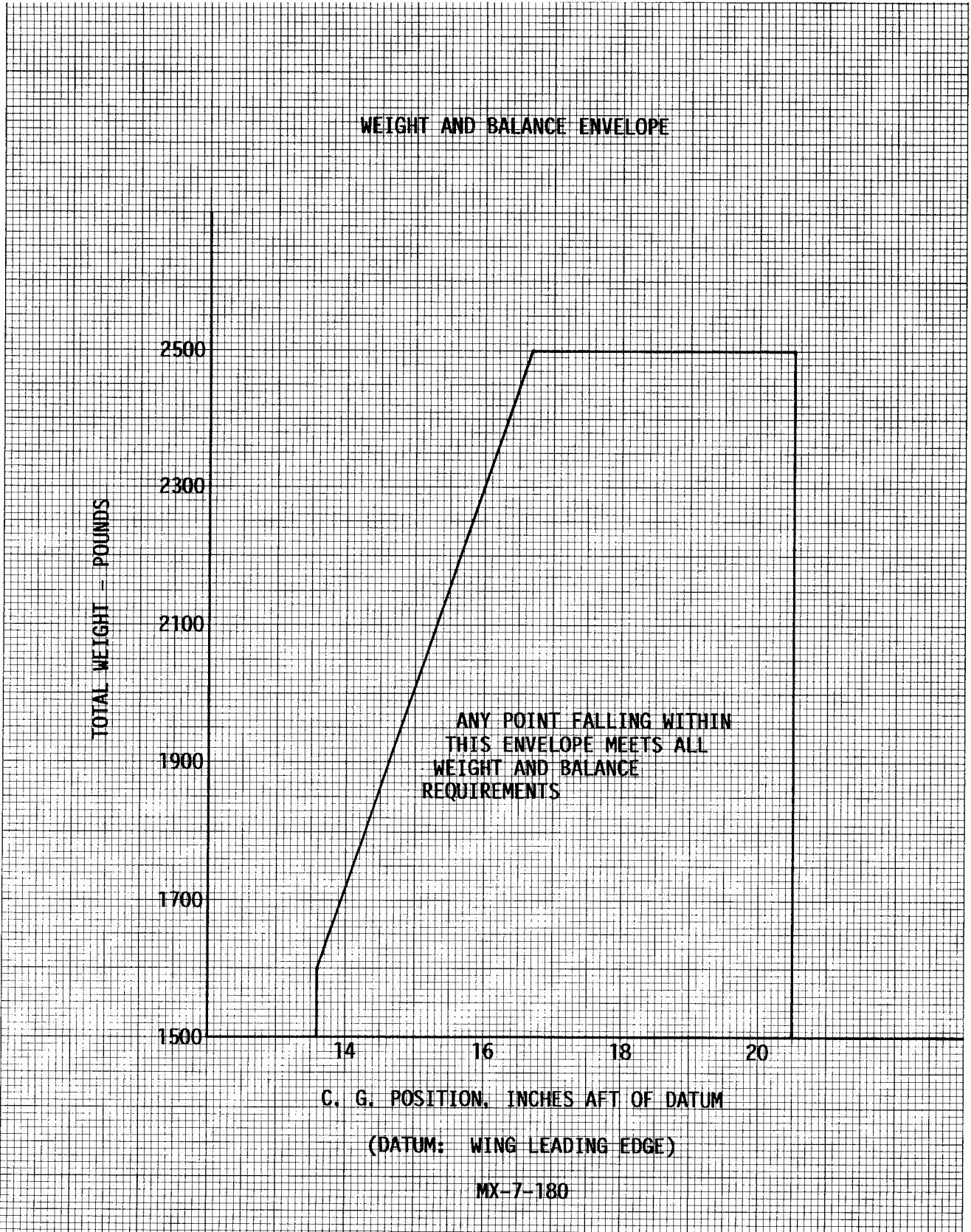


LOADING CHART

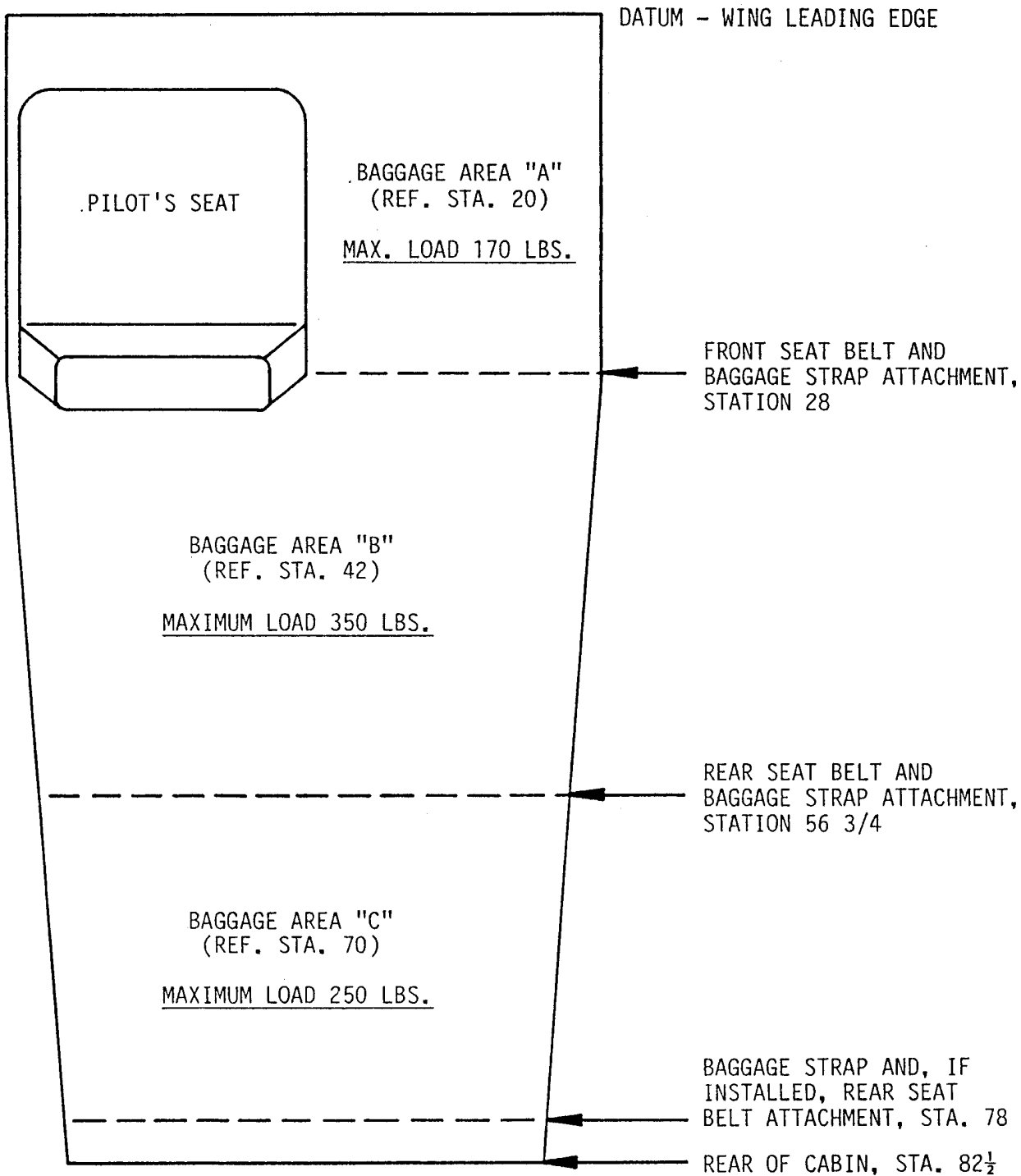
PROCEDURE FOR DETERMINING WEIGHT & CENTER OF GRAVITY:

1. Add weight to be carried to the licensed empty weight of the aircraft.
2. Find moments of item 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 for Step 2, find the point on the Weight and Balance Envelope.





STRUCTURAL CAPACITY CHART



SERIAL NO. _____ REG. NO. _____ MODEL _____

EQUIPMENT CHANGE - WEIGHT AND BALANCE

ITEM'S (MAKE & MODEL) WEIGHT ARM MOMENT'S

Previous Aircraft Empty			

- A. New Empty Weight _____ lbs.
- B. New Empty Center of Gravity _____ in. lbs.
- 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 _____

SECTION VI

AIRCRAFT SERVICING, HANDLING AND MAINTENANCE

6.1 INTRODUCTION:

Our dealers and distributors are anxious to serve you and will gladly furnish advice as to proper servicing methods. You may also address request for information on any items not covered in this manual to the Service Dept. of Maule Air, Inc. In correspondence, please be certain to give complete information on serial number, engine make and model, etc.

The aircraft Type Data Plate can be found on the left side of the vertical fin just above the horizontal stabilizer or in earlier airplanes, on the door post on the pilot's side toward the bottom. Also, pertinent engine and propeller data is in the aircraft Log Book.

A Service Manual is furnished with each aircraft. Extra copies and a Parts Manual can be obtained by contacting the Service Dept. of Maule Air, Inc.

6.2 AIRPLANE INSPECTION PERIOD:

The airplane must be maintained as outlined in FAR 43. Recommended inspections are outlined in the airplane Maintenance Manual. The owner/operator is responsible for Airworthiness Directives (AD's) that may be issued from time to time. Reference should be made to FAR 91 and FAR 43 requirements for properly certified agency or personnel to accomplish the required FAA inspection and most of the manufacturer's recommended inspections. It is recommended that owner's name and address along with aircraft serial number be registered with Maule Air for any Maule Service Letters or Service Bulletins released affecting their aircraft.

6.3 PREVENTIVE MAINTENANCE THAT MAY BE ACCOMPLISHED BY A CERTIFIED PILOT:

- A. A certified pilot who owns or operates an airplane not used as an air carrier is authorized by FAR Part 43 to perform limited preventive maintenance on his airplane. Refer to FAR Part 43 for list of things the pilot may do. Pilots operating aircraft of other than U.S. registry should refer to the regulations of the country of certification for information on preventive maintenance that may be performed by pilots. All other maintenance required on airplane is to be accomplished by appropriately licensed personnel and that airplane dealer or service station should be contacted for further information.
- B. Preventive maintenance should be accomplished in accordance with the appropriate airplane Maintenance Manual. Manual should be obtained prior to performing preventive maintenance to be sure that proper procedures are followed.

6.4 ALTERATIONS OR REPAIRS TO AIRPLANE:

Alterations or repairs to airplane must be accomplished by licensed personnel. The FAA should be contacted prior to any alterations on airplane to insure that airworthiness of the airplane is not violated.

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