

SECTION 6 WEIGHT & BALANCE/ EQUIPMENT LIST

TABLE OF CONTENTS

	Page
Introduction	6-3
Airplane Weighing Procedures	6-3
Weight And Balance	6-6
Equipment List	6-13

10

11

12

13

14

15

16

INTRODUCTION

This section describes the procedure for establishing the basic empty weight and moment of the airplane. Sample forms are provided for reference. Procedures for calculating the weight and moment for various operations are also provided. A comprehensive list of all Cessna equipment available for this airplane is included at the back of this section.

It should be noted that specific information regarding the weight, arm, moment and installed equipment for this airplane as delivered from the factory can only be found in the plastic envelope carried in the back of this handbook.

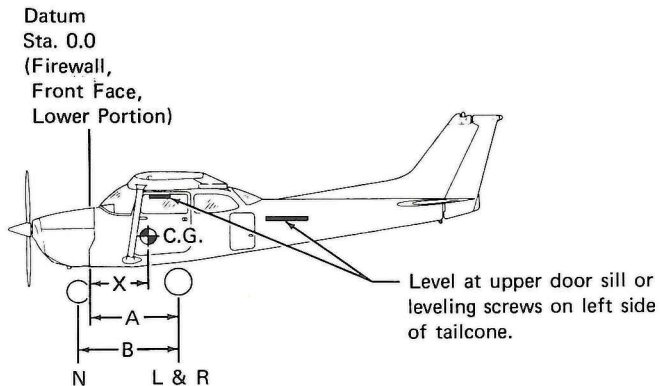
It is the responsibility of the pilot to ensure that the airplane is loaded properly.

AIRPLANE WEIGHING PROCEDURES

1. Preparation:
 - a. Inflate tires to recommended operating pressures.
 - b. Remove the fuel tank sump quick-drain fittings and fuel selector valve drain plug to drain all fuel.
 - c. Remove oil sump drain plug to drain all oil.
 - d. Move sliding seats to the most forward position.
 - e. Raise flaps to the fully retracted position.
 - f. Place all control surfaces in neutral position.
2. Leveling:
 - a. Place scales under each wheel (minimum scale capacity, 500 pounds nose, 1000 pounds each main).
 - b. Deflate the nose tire and/or lower or raise the nose strut to properly center the bubble in the level (see figure 6-1).
3. Weighing:
 - a. With the airplane level and brakes released, record the weight shown on each scale. Deduct the tare, if any, from each reading.
4. Measuring:
 - a. Obtain measurement A by measuring horizontally (along the airplane center line) from a line stretched between the main wheel centers to a plumb bob dropped from the firewall.
 - b. Obtain measurement B by measuring horizontally and parallel to the airplane center line, from center of nose wheel axle, left side, to a plumb bob dropped from the line between the main wheel centers. Repeat on right side and average the measurements.
5. Using weights from item 3 and measurements from item 4, the airplane weight and C.G. can be determined.
6. Basic Empty Weight may be determined by completing figure 6-1.

**SECTION 6
WEIGHT & BALANCE/
EQUIPMENT LIST**

**CESSNA
MODEL 172P**



Scale Position	Scale Reading	Tare	Symbol	Net Weight
Left Wheel			L	
Right Wheel			R	
Nose Wheel			N	
Sum of Net Weights (As Weighed)			W	

$$X = \text{ARM} = \frac{(A) - (N) \times (B)}{W}; X = (\quad) - (\quad) \times (\quad) = (\quad) \text{ IN.}$$

Item	Weight (Lbs.)	X C.G. Arm (In.)	Moment/1000 (Lbs.-In.)
Airplane Weight (From Item 5, page 6-3)			
Add: Oil (8 Qts at 7.5 Lbs/Gal)	15.0	-14.0	-0.2
Add Unusable Fuel:			
Std. Tanks (3 Gal at 6 Lbs/Gal)		46.0	
L.R. Tanks (4 Gal at 6 Lbs/Gal)		46.0	
Integral Tanks (6 Gal at 6 Lbs/Gal)		46.0	
Equipment Changes			
Airplane Basic Empty Weight			

Figure 6-1. Sample Airplane Weighing

**LEERMASSE UND SCHWERPUNKTLAGE DES LUFTFAHRZEUGES
MASSE À VIDE ET POSITION DU CENTRE DE GRAVITÉ DE L'AÉRONEF
WEIGHT & BALANCE RECORD**

Datum Date	Artikel/Article		Beschreibung der Änderung Description de la modification	WERKNUMMER 17274190 NUMÉRO DE SÉRIE				KENNZEICHEN IMMATICULATION				LEERMASSE MASSE À VIDE			
	Einbau Pose	Ausbau Dépose		Masseveränderung / Modification de la masse				Masse	Arm/Bras	Moment	Masse	Arm/Bras	Moment	Lbs	Lbs/In
				Masse	Arm/Bras	Moment	Ausbau / Dépose (-)								
23.06.1995	-	-	Neuwägung bei Auslieferung												
03.07.1995	X	-	KX-155 + IND. K1208				5,5	13,3	0,073	-	-	-	1479,8	51,2869	
04.07.1995	X	-	True Flight Timer				0,8	14,0	0,0112	-	-	-	1485,3	51,3599	
25.07.1995	X	-	Feuerlöschser				3,5	37,0	0,1295	-	-	-	1486,1	51,3711	
27.07.1995	X	-	Voltige Converter PCW150				1,5	11,9	0,0178	-	-	-	1489,6	51,5006	
20.08.2009	X	X	XPDR ersetzt (Mode S)				-	-	-	-	-	-	1491,15	51,5184	
20.10.2010	-	-	neu gewogen				-	-	-	-	-	-	1492,3	51,5293	
28.01.2014	X	-	External Power conector				3,2	-3,5	-0,0812	-	-	-	1475,5	58,022	
30.07.2014	-	-	neu gewogen TM 73.920-12				-	-	-	-	-	-	1478,7	58,0108	
08.12.2015	X	-	Flarm Einbau				2,09	0,02	0,0500	-	-	-	1517,15	60,0393	
24.01.2018	x	x	8,33 Com ersetzt				3,09	13,3					1519,24	60,0890	
04.09.2018			Penn Yan STC SA703GL Neu gewogen							5,5	13,3	0,072	1473,1	57,989	
											38,43		1521,5	58,47	

SAMPLE WEIGHT AND BALANCE RECORD

(Continuous History of Changes in Structure or Equipment Affecting Weight and Balance)

AIRPLANE MODEL <u>N6393K</u>		SERIAL NUMBER <u>17274190</u>		PAGE NUMBER					
DATE	ITEM NO.		WEIGHT CHANGE				RUNNING BASIC EMPTY WEIGHT		
	In	Out	ADDED (+)	REMOVED (-)		Wt. (lb.)	Moment /1000	Wt. (lb.)	Moment /1000
DESCRIPTION OF ARTICLE OR MODIFICATION			Wt. (lb.)	Arm (in.)	Moment /1000	Wt. (lb.)	Arm (in.)	Moment /1000	Moment /1000
23-6-95									
07-27-95	X		new weight						1479.8 51.2869
08-27-95	X		KX-155 + Incl. KI 208	5.5	13.3	0.073			1485.3 51.3599
08-27-95	X		True Flight Trimmer Label	0.8	14.0	0.0112			1490.1 51.3711
25-07-95	X		Fewer'scher Gloria Avus A	3.5	37.0	0.1295			1493.6 51.5006
27-07-95	X		Voltage Converter PWC 150	1.5	11.9	0.0178			1495.1 51.5184

115571 Lichol
115571 Lichol
W/C 1229
W/C 1229

prop
116-20-12-2
Lynchburg

Figure 6-2. Sample Weight and Balance Record

WEIGHT AND BALANCE

The following information will enable you to operate your Cessna within the prescribed weight and center of gravity limitations. To figure weight and balance, use the Sample Problem, Loading Graph, and Center of Gravity Moment Envelope as follows:

Take the basic empty weight and moment from appropriate weight and balance records carried in your airplane, and enter them in the column titled YOUR AIRPLANE on the Sample Loading Problem.

NOTE

In addition to the basic empty weight and moment noted on these records, the C.G. arm (fuselage station) is also shown, but need not be used on the Sample Loading Problem. The moment which is shown must be divided by 1000 and this value used as the moment/1000 on the loading problem.

Use the Loading Graph to determine the moment/1000 for each additional item to be carried; then list these on the loading problem.

NOTE

Loading Graph information for the pilot, passengers and baggage is based on seats positioned for average occupants and baggage loaded in the center of the baggage areas as shown on the Loading Arrangements diagram. For loadings which may differ from these, the Sample Loading Problem lists fuselage stations for these items to indicate their forward and aft C.G. range limitations (seat travel and baggage area limitation). Additional moment calculations, based on the actual weight and C.G. arm (fuselage station) of the item being loaded, must be made if the position of the load is different from that shown on the Loading Graph.

Total the weights and moments/1000 and plot these values on the Center of Gravity Moment Envelope to determine whether the point falls within the envelope, and if the loading is acceptable.

LOADING ARRANGEMENTS

*Pilot or passenger center of gravity on adjustable seats positioned for average occupant. Numbers in parentheses indicate forward and aft limits of occupant center of gravity range.

**Arm measured to the center of the areas shown.

- NOTES:
1. The usable fuel C.G. arm for standard, long range and integral tanks is located at station 48.0.
 2. The rear cabin wall (approximate station 108) or aft baggage wall (approximate station 142) can be used as convenient interior reference points for determining the location of baggage area fuselage stations.

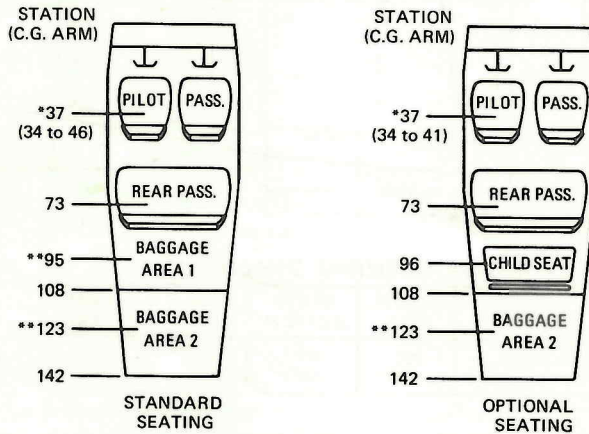
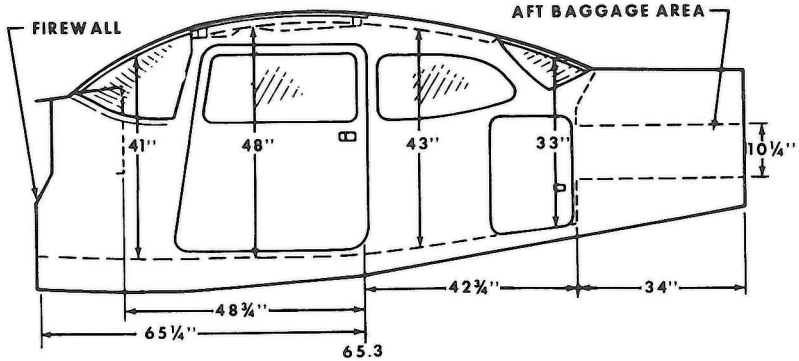


Figure 6-3. Loading Arrangements

CABIN HEIGHT MEASUREMENTS



DOOR OPENING DIMENSIONS

	WIDTH (TOP)	WIDTH (BOTTOM)	HEIGHT (FRONT)	HEIGHT (REAR)	
CABIN DOOR	32"	37"	40 1/2"	39"	— WIDTH —
BAGGAGE DOOR	15 1/4"	15 1/4"	22"	21"	● LWR WINDOW LINE
					* CABIN FLOOR

CABIN WIDTH MEASUREMENTS

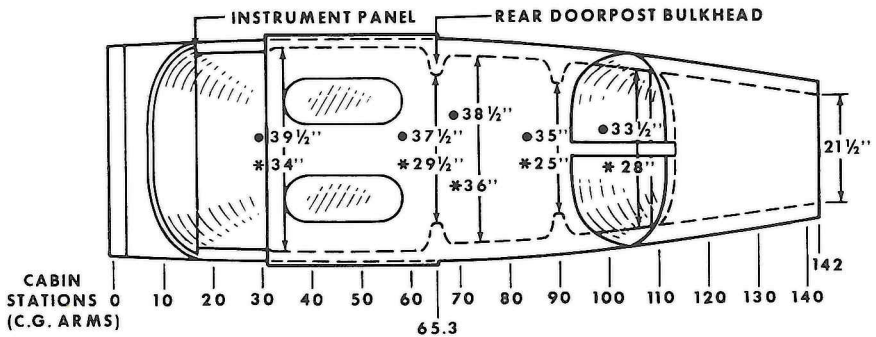


Figure 6-4. Internal Cabin Dimensions

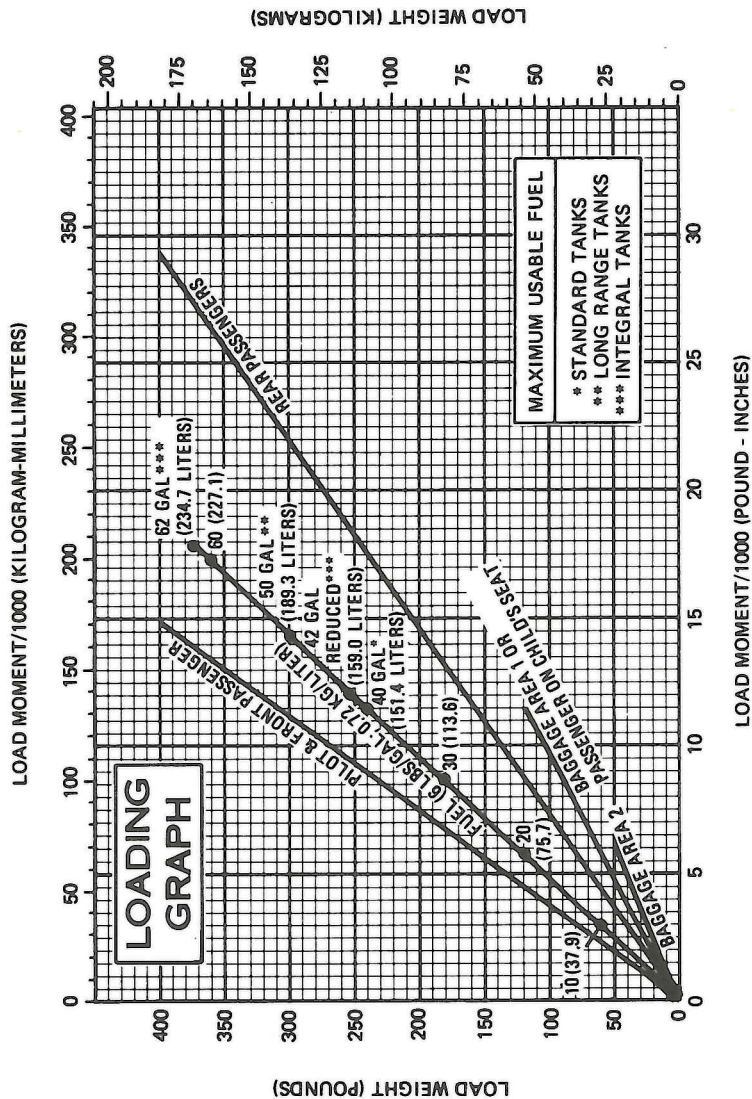
	SAMPLE AIRPLANE		YOUR AIRPLANE	
	Weight (lbs.)	Moment (lb. -ins. /1000)	Weight (lbs.)	Moment (lb. - ins. /1000)
SAMPLE LOADING PROBLEM				
1. Basic Empty Weight (Use the data pertaining to your airplane as it is presently equipped. Includes unusable fuel and full oil)	1467	57.3		
2. Usable Fuel (At 6 Lbs./Gal.)	240	11.5		
Standard Tanks (40 Gal. Maximum)				
Long Range Tanks (50 Gal. Maximum)				
Integral Tanks (62 Gal. Maximum)				
Integral Reduced Fuel (42 Gal.)				
3. Pilot and Front Passenger (Station 34 to 46)	340	12.6		
4. Rear Passengers	340	24.8		
5. * Baggage Area 1 or Passenger on Child's Seat (Station 82 to 108, 120 Lbs. Max.)	20	1.9		
6. * Baggage Area 2 (Station 108 to 142, 50 Lbs. Max.)				
7. RAMP WEIGHT AND MOMENT	2407	108.1		
8. Fuel allowance for engine start, taxi, and runup	-7	-3		
9. TAKEOFF WEIGHT AND MOMENT (Subtract Step 8 from Step 7)	2400	107.8		
10. Locate this point (2400 at 107.8) on the Center of Gravity Moment Envelope, and since this point falls within the envelope, the loading is acceptable.				

* The maximum allowable combined weight capacity for baggage areas 1 and 2 is 120 lbs.

Figure 6-5. Sample Loading Problem

SECTION 6
WEIGHT & BALANCE/
EQUIPMENT LIST

CESSNA
MODEL 172P



NOTE: Line representing adjustable seats shows the pilot or passenger center of gravity on adjustable seats positioned for an average occupant. Refer to the Loading Arrangements diagram for forward and aft limits of occupant C.G. range.

Figure 6-6. Loading Graph

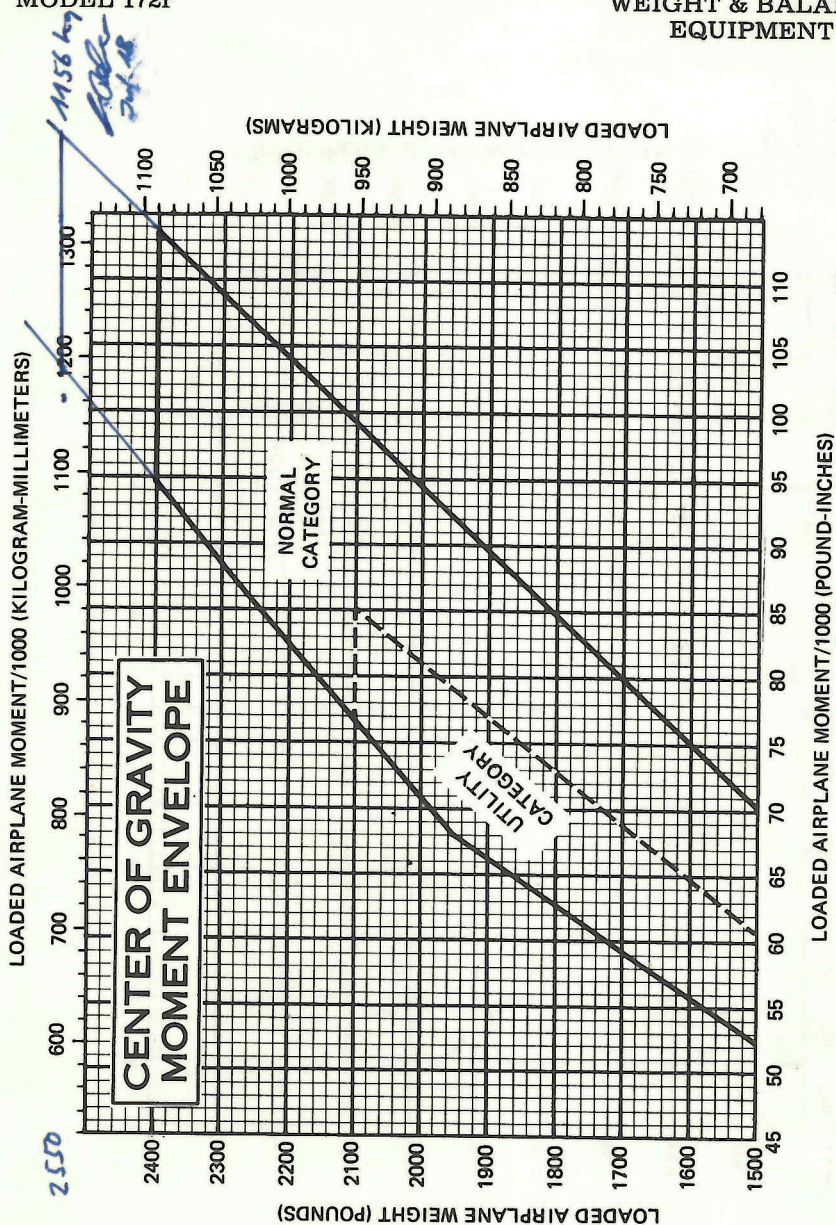


Figure 6-7. Center of Gravity Moment Envelope

SECTION 6
 WEIGHT & BALANCE/
 EQUIPMENT LIST

CESSNA
 MODEL 172P

1156 kg
2 Jul. 18

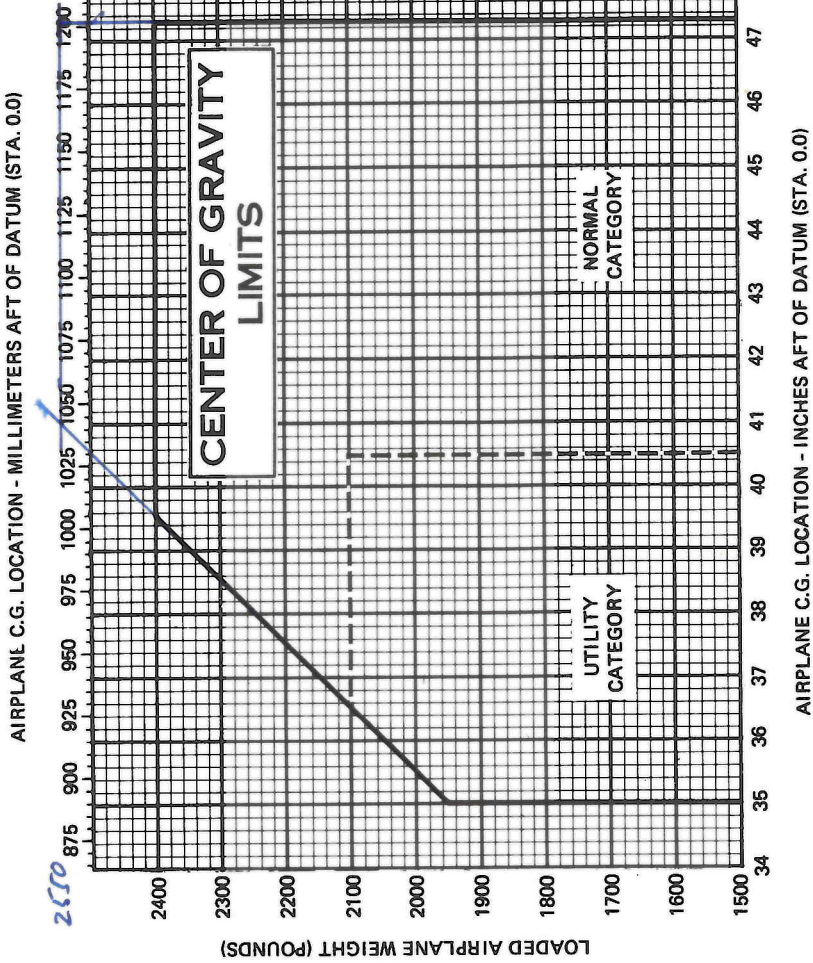


Figure 6-8. Center of Gravity Limits

SECTION 6
 WEIGHT & BALANCE/
 EQUIPMENT LIST

CESSNA
 MODEL 172P

1156 kg
2 Jul. 18

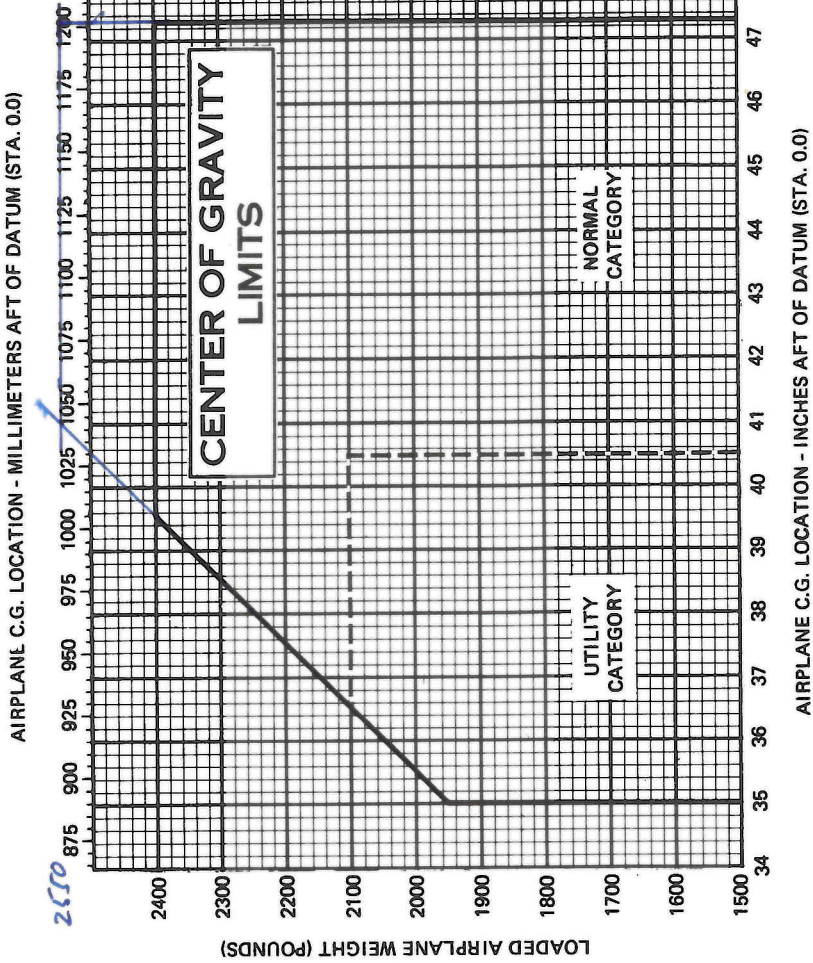


Figure 6-8. Center of Gravity Limits