

WEIGHT AND BALANCE (Continued)

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.

When a cargo pack is installed, it is necessary to determine the C.G. arm and calculate the moment/1000 of items carried in the pack. The arm for any location in the pack can be determined from the diagram on Figure 6-5. Multiply the weight of the item by the C.G. arm, then divide by 1000 to get the moment/1000. The maximum loading capacity of the pack is 300 pounds.

NOTE

Each loading should be figured in accordance with the above paragraphs. When the loading is light (such as pilot and copilot, and no oxygen system, rear seats or cargo), be sure to check the forward balance limits. When loading is heavy (near gross weight), be sure to check the aft balance limits.

To avoid time consuming delays in cargo and/or passenger shifting, plan your load so that the heaviest cargo and/or passengers are in the forward part of the airplane or cargo pack, and the lightest in the rear. Always plan to have any vacant space at the rear of the airplane or pack. For example, do not have passengers occupy the aft seat unless the front and center seats are to be occupied.

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.

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WEIGHT AND BALANCE (Continued)

BAGGAGE AND CARGO TIEDOWN

A nylon baggage net having four tiedown straps is provided as standard equipment to secure baggage/cargo in cargo area D. Two floor-mounted "D" ring tiedowns and two "D" ring tiedowns located in the aft cabin top, serve as the attaching points for the net in cargo area "D". The "D" rings which serve as the attachments for the forward tiedown straps are mounted in the floor near each sidewall approximately at station 123. The two "D" rings for the aft tiedown straps are installed at the aft edge of the top rear windows approximately at station 135.

It will be necessary to properly secure cargo loads before flight. To supplement the standard "D" rings provided for tiedown, additional "D" rings are available from any Cessna Dealer. If more tiedown points are needed, the shoulder harness attaching points may be used. Rope, strap, or cable used for tiedown should be rated at a minimum of ten times the load weight capacity of the tiedown fittings used.

Refer to Figure 6-4 for additional information concerning attachments in restraining cargo.

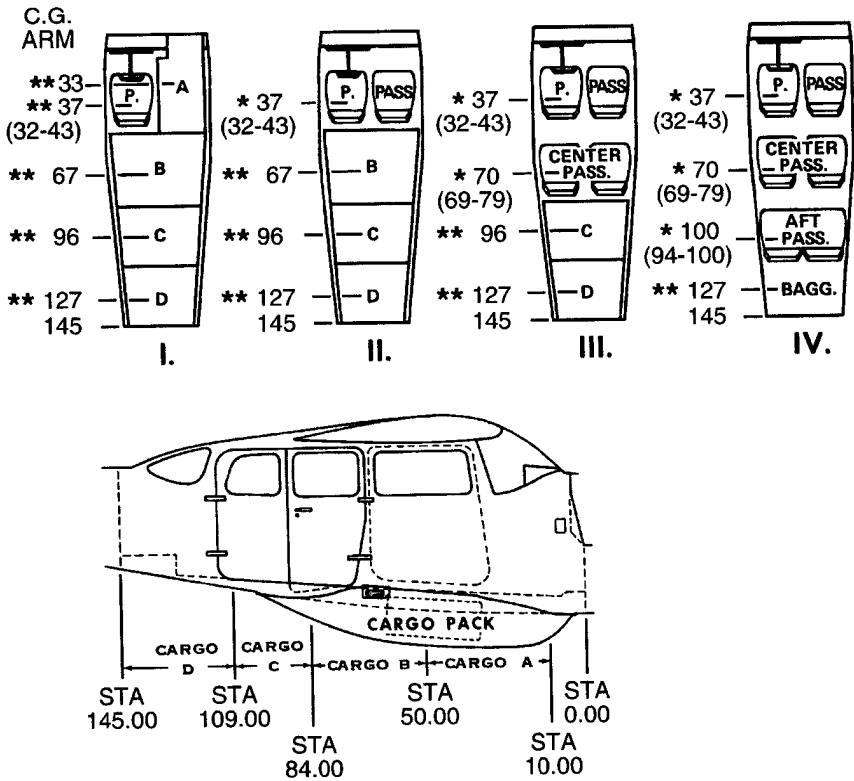
ITEM	LOCATION	MAXIMUM RATED LOAD (POUNDS)
"D" Rings	Floor and Aft Cabin Top	60
Shoulder Strap	Cabin Top	175

*Only the total rated load of tiedowns located aft of the cargo load are to be considered when determining adequate restraint of cargo. Tiedowns are also required forward of the load to prevent the load from shifting. The type of the tiedowns available, and the sum of their individual rated loads, are the determining factors in selecting the number of tiedowns needed.

FOR EXAMPLE:

A 400-pound load would require that a minimum of four (4) tiedowns rated at 100 pounds each be located aft of the load for proper restraint. Additional tiedowns forward of the load would be needed to prevent the load from shifting.

LOADING ARRANGEMENTS



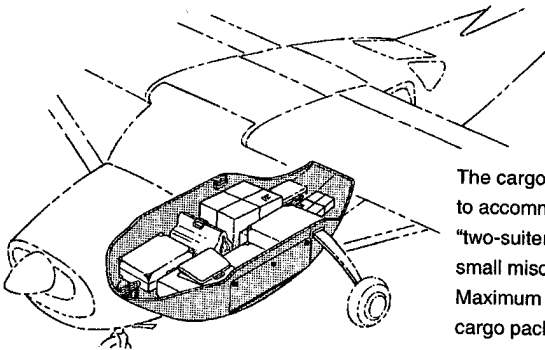
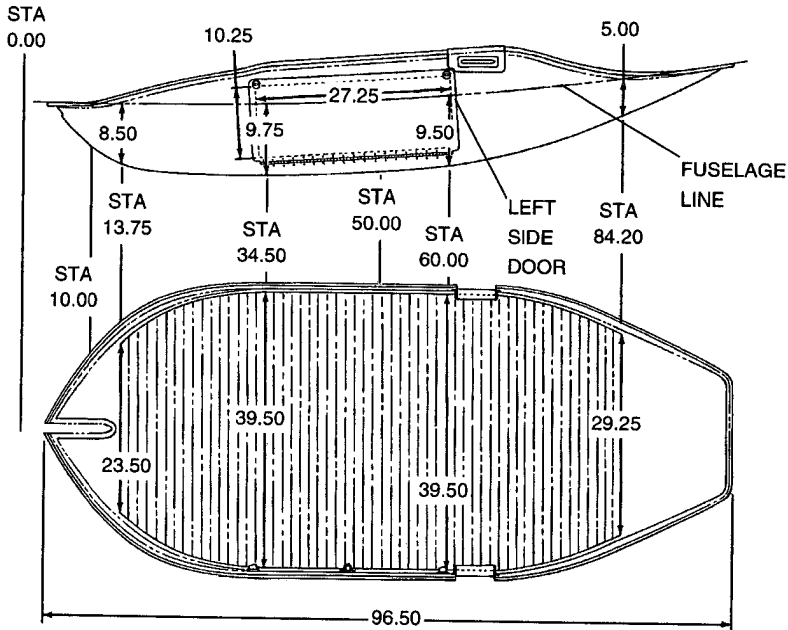
- * Pilot or passenger center of gravity on adjustable seats positioned for average occupant. Numbers in parentheses indicate forward and aft limits of occupant center of gravity range.
- ** Arms measured to the center of the areas shown.

NOTE 1: The usable fuel C.G. arm is located at station 46.50.

NOTE 2: The aft baggage wall (approximate station 145.00) can be used as a convenient interior reference point for determining the location of baggage area fuselage stations.

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Figure 6-3. Loading Arrangements

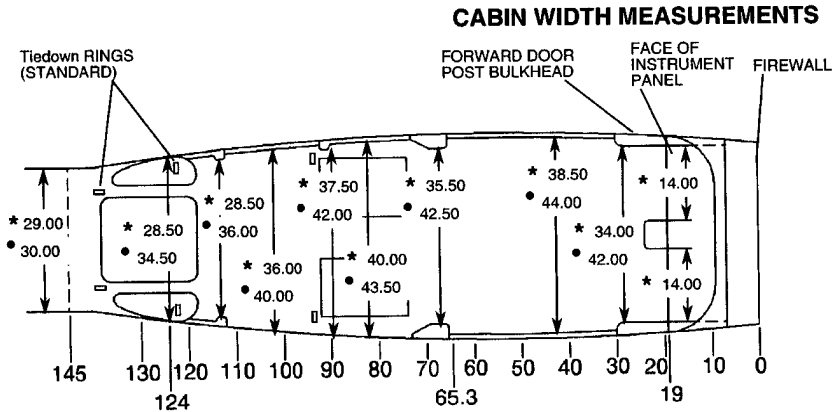
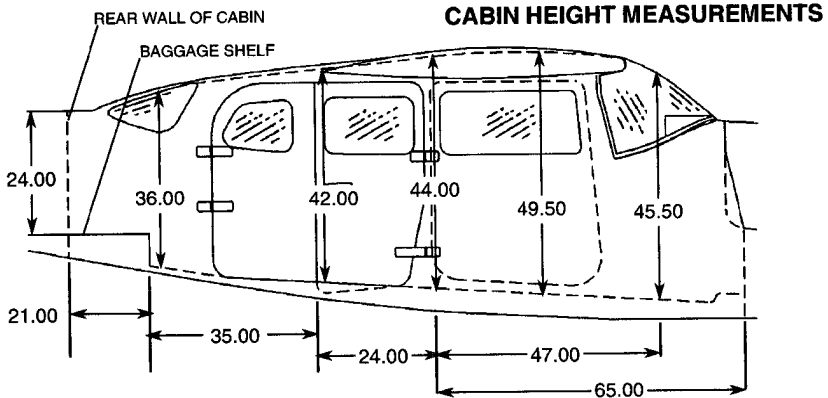


The cargo pack was designed to accommodate three "two-suiters", plus other small miscellaneous articles. Maximum loading for cargo pack is 300 pounds.

NOTE 1: STATION LOCATION AND C.G. ARM ARE IDENTICAL.

1285X1011

Figure 6-4. Cargo Pack



CODE

- * CABIN FLOOR
- LWR WINDOW LINE

DOOR OPENING DIMENSIONS

	WIDTH (TOP)	WIDTH (BOTTOM)	HEIGHT (FRONT)	HEIGHT (REAR)
CABIN DOOR	32.50	37.00	41.00	39.00
CARGO DOORS	43.00	40.00	39.25	37.50

- NOTE 1:** Use the forward face of the rear door post as a reference point to locate C.G. arms. For example, a box with its center of weight located 13.00 inches aft of the rear door post would have a C.G. arm of (65.30 + 13.00 = 78.30) 78.30 inches.
- NOTE 2:** Maximum allowable floor loading: 200 pounds/square foot. However, when items with small or sharp support areas are carried, the installation of a .25 inch plywood floor is highly recommended to protect the aircraft structure.
- NOTE 3:** All dimensions shown are in inches.

1285X1005

Figure 6-5. Internal Cabin Dimensions

ITEM DESCRIPTION	WEIGHT AND MOMENT TABULATION			
	SAMPLE AIRPLANE		YOUR AIRPLANE	
	Weight (lbs.)	Moment (Lb-ins. /1000)	Weight (lbs.)	Moment (Lb-ins. /1000)
1. Basic Empty Weight (Use the data pertaining to your airplane as it is presently equipped. Includes unusable fuel and full oil)	2204	76.4		
2. Usable Fuel (At 6 Lbs./Gal.)				
Std Fuel (87 Gallons Maximum)	528	24.6		
Reduced Fuel (64 Gallons)				
3. Pilot and Front Passenger (Station 32 to 43)	340	12.6		
4. Center Passengers (Sta. 69 to 79)	340	23.8		
Aft Passengers (Sta. 94 to 100)	155	15.0		
Baggage IV or V (Sta. 109 to 145; 180 Lbs. Max.)	47	5.2		
5. *Cargo "A" (Station 10 to 50)				
*Cargo "B" (Station 50 to 84)				
*Cargo "C" (Station 84 to 109)				
*Cargo "D" (Station 109 to 145)				
6. Cargo Pack (Station 10 to 84; 300 lbs. Max.)				
7. RAMP WEIGHT AND MOMENT	3614	157.6		
8. Fuel allowance for engine start, taxi and runup	-14	-.7		
9. TAKEOFF WEIGHT AND MOMENT (Subtract Step 8 from Step 7)	3600	156.9		

10. Locate this point (3600 at 156.9) on the Center of Gravity Moment Envelope, and since this point falls within the envelope, the loading is acceptable.

* Maximum allowable cargo loads will be determined by the type and number of tie-downs used, as well as by the airplane weight and C.G. limitations. Floor loading must not exceed 200 lbs. per square foot.

Figure 6-6. Sample Loading Problem
Serials 20608001 thru 20608173. (Sheet 1 of 3)

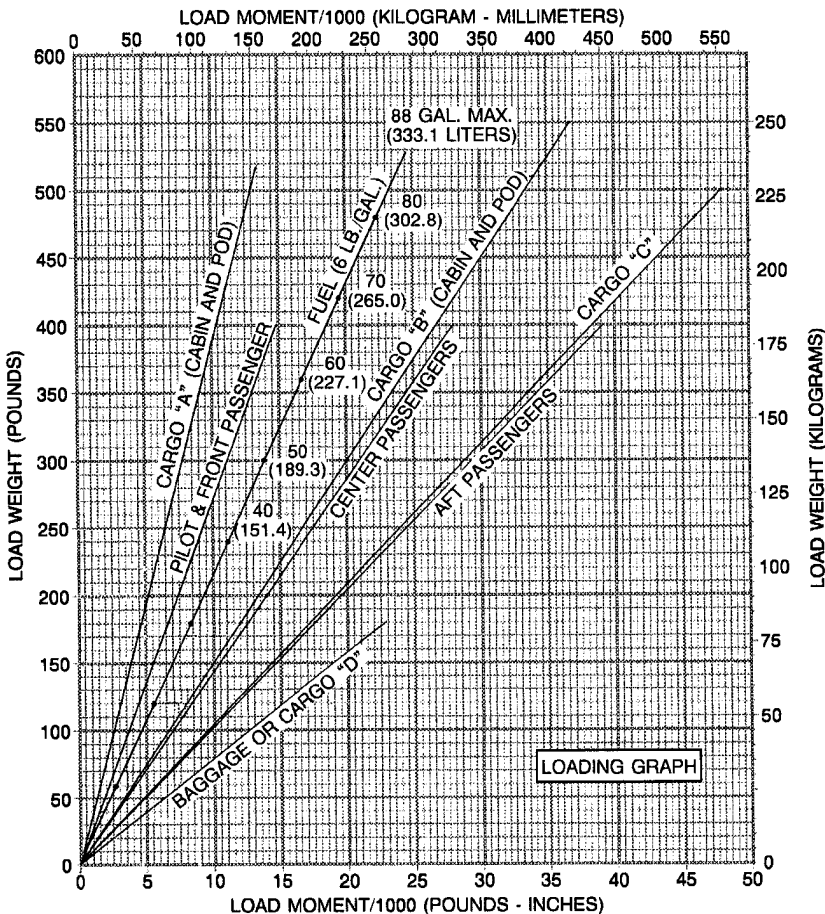
ITEM DESCRIPTION	WEIGHT AND MOMENT TABULATION			
	SAMPLE AIRPLANE		YOUR AIRPLANE	
	Weight (lbs.)	Moment (Lb-ins. /1000)	Weight (lbs.)	Moment (Lb-ins. /1000)
1. Basic Empty Weight (Use the data pertaining to your airplane as it is presently equipped. Includes unusable fuel and full oil)	2210	76.6		
2. Usable Fuel (At 6 Lbs./Gal.)				
Std Fuel (87 Gallons Maximum)	522	24.4		
Reduced Fuel (64 Gallons)				
3. Pilot and Front Passenger (Station 32 to 43)	340	12.6		
4. Center Passengers (Sta. 69 to 79)	340	23.8		
Aft Passengers (Sta. 94 to 100)	155	15.0		
Baggage IV or V (Sta. 109 to 145; 180 Lbs. Max.)	47	5.2		
5. *Cargo "A" (Station 10 to 50)				
*Cargo "B" (Station 50 to 84)				
*Cargo "C" (Station 84 to 109)				
*Cargo "D" (Station 109 to 145)				
6. Cargo Pack (Station 10 to 84; 300 lbs. Max.)				
7. RAMP WEIGHT AND MOMENT	3614	157.6		
8. Fuel allowance for engine start, taxi and runup	-14	-.7		
9. TAKEOFF WEIGHT AND MOMENT (Subtract Step 8 from Step 7)	3600	156.9		
10. Locate this point (3600 at 156.9) on the Center of Gravity Moment Envelope, and since this point falls within the envelope, the loading is acceptable.				
* Maximum allowable cargo loads will be determined by the type and number of tie-downs used, as well as by the airplane weight and C.G. limitations. Floor loading must not exceed 200 lbs. per square foot.				

Figure 6-6. Sample Loading Problem
Serials 20608174 and on. (Sheet 2)

YOUR AIRPLANE		YOUR AIRPLANE		YOUR AIRPLANE	
Weight (lbs.)	Moment (Lb-ins, /1000)	Weight (lbs.)	Moment (Lb-ins, /1000)	Weight (lbs.)	Moment (Lb-ins, /1000)

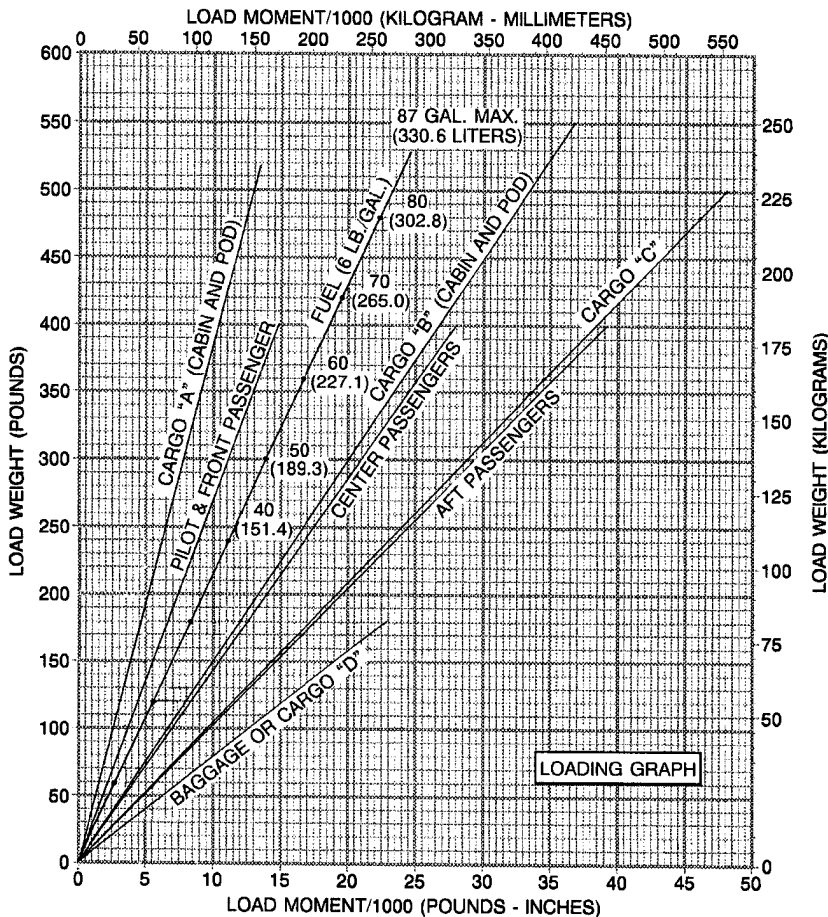
When several loading configurations are representative of your operations, it may be useful to fill out one or more of the above columns so that specific loadings are available at a glance.

Figure 6-6. Sample Loading Problem (Sheet 3)



NOTES: Lines representing adjustable seats show 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 6-7. Loading Graph (Sheet 1 of 2)
Serials 20608001 thru 20608173



NOTES: Lines representing adjustable seats show 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 6-7. Loading Graph (Sheet 2)
Serials 20608174 and on.

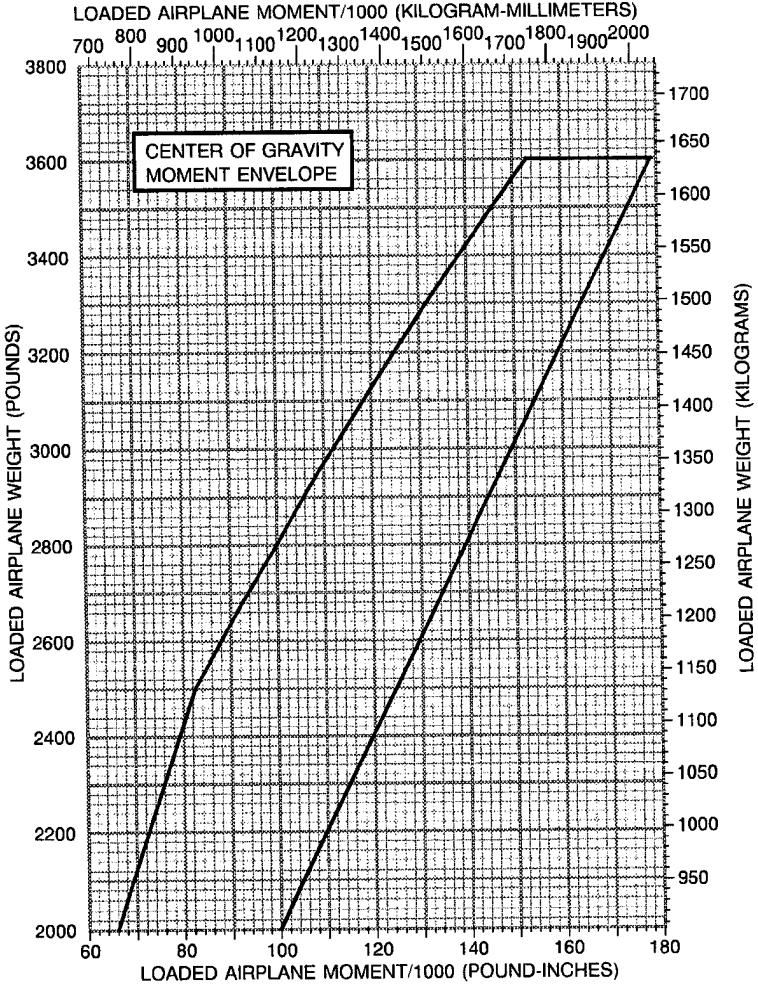


Figure 6-8. Center of Gravity Moment Envelope

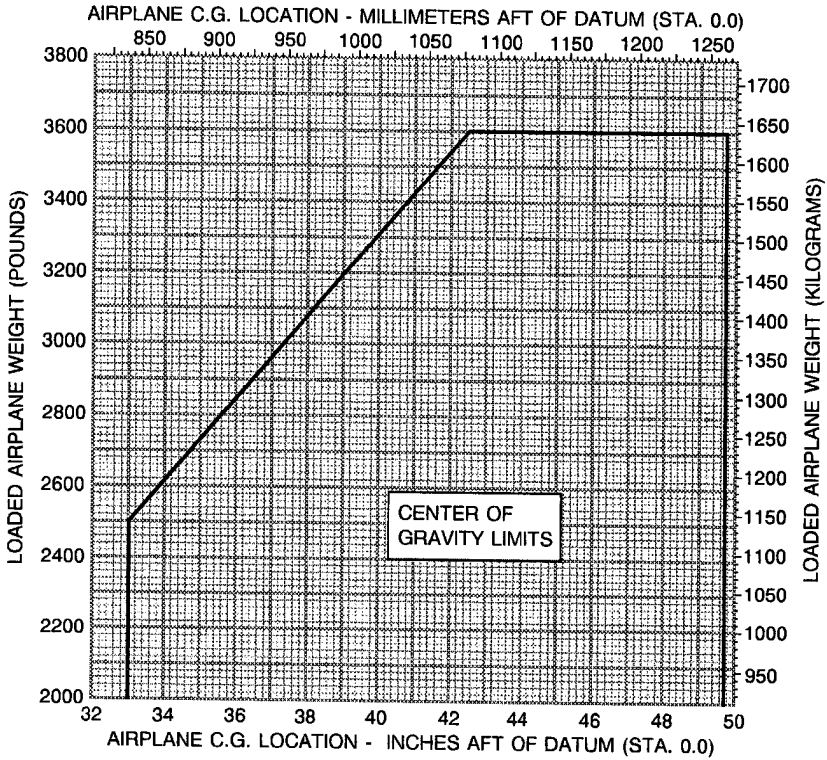


Figure 6-9. Center of Gravity Limits