6.7 WEIGHT AND BALANCE DETERMINATION FOR FLIGHT

(a) Add the weight of all items to be loaded to the basic empty weight.
(b) Use the Loading Graph (Figure 6-15) to determine the moment of all items to be carried in the airplane.
(c) Add the moment of all items to be loaded to the basic empty weight moment.
(d) Divide the total moment by the total weight to determine the C.G. location.
(e) By using the figures of item (a) and item (d) (above), locate a point on the C.G. range and weight graph (Figure 6-17). If the point falls within the C.G. envelope, the loading meets the weight and balance requirements.

	Weight (Lbs.)	Arm Aft Datum (Inches)	Moment (Lb-In.)
Basic Empty Weight	1169.0	73.2	85570
Pilot and Passenger**	340.0	85.5	29070
Fuel (30 Gallon Maximum)	61.0	75.4	4599
Baggage (100 Lbs. Maximum)*	100.0	115.0	11500
Total Loaded Airplane	1670.0	78.3	130739

The center of gravity (C.G.) of this sample loading problem is at 78.3 inches aft of the datum line. Locate this point (78.3) on the C.G. range and weight graph. Since this point falls within the weight - C.G. envelope, this sample loading meets the weight and balance requirements.

IT IS THE RESPONSIBILITY OF THE PILOT AND AIRCRAFT OWNER TO INSURE THAT THE AIRPLANE IS LOADED PROPERLY.

*No baggage allowed for spins.
**Occupant C.G. is shown with the seats in the fourth notch from the most forward position. See Figure 6-14 for the seat position and corresponding arm aft datum.

SAMPLE LOADING PROBLEM (NORMAL CATEGORY)
Figure 6-11

	Weight (Lbs.)	Arm Aft Datum (Inches)	Moment (Lb-In.)
Basic Empty Weight			
Pilot and Passenger**		85.5	
Fuel (30 Gallon Maximum)		75.4	
Baggage (100 Lbs. Maximum)*		115.0	
Total Loaded Airplane			

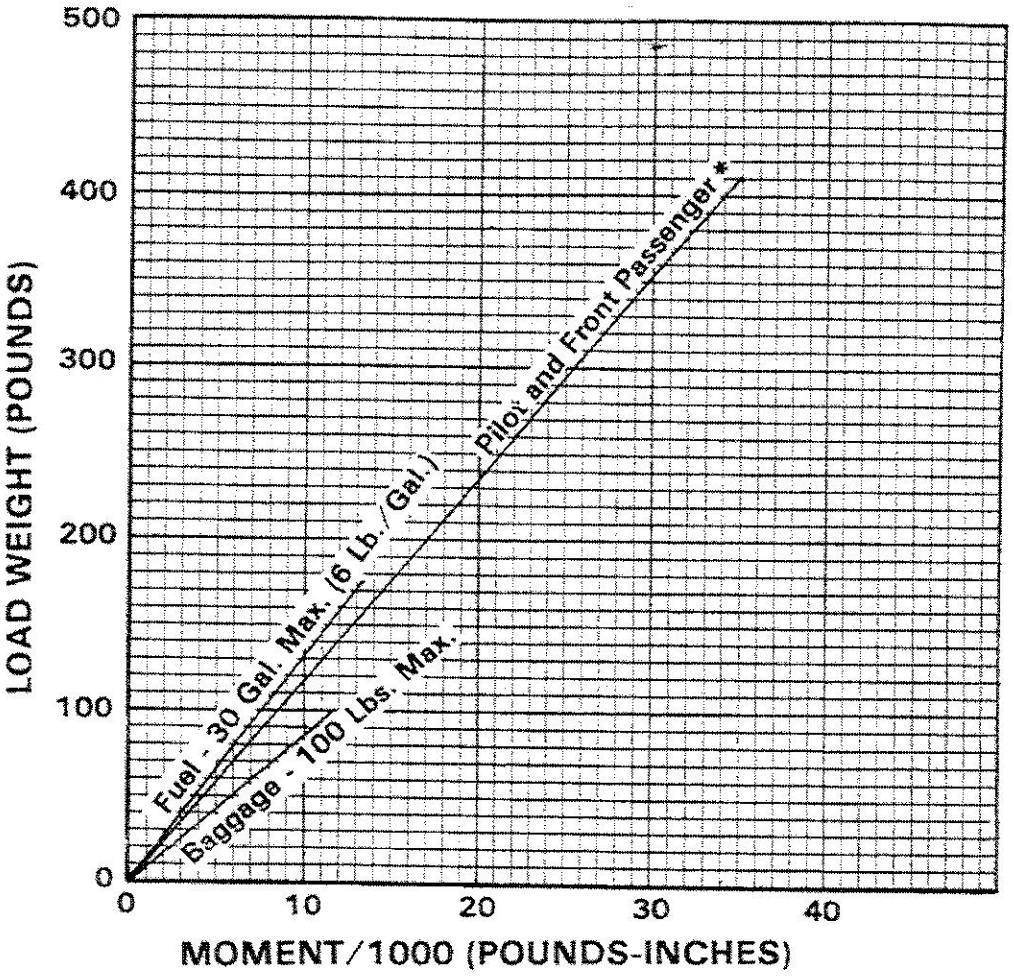
Totals must be within approved weight and C.G. limits. It is the responsibility of the airplane owner and the pilot to insure that the airplane is loaded properly. The Basic Empty Weight C.G. is noted on the Weight and Balance Data Form (Figure 6-7). If the airplane has been altered, refer to the Weight and Balance Record for this information.

*No baggage allowed for spins.
**Occupant C.G. is shown with the seats in the fourth notch from the most forward position. For other seat locations and corresponding arm aft datum see Figure 6-14.

WEIGHT AND BALANCE LOADING FORM
Figure 6-13

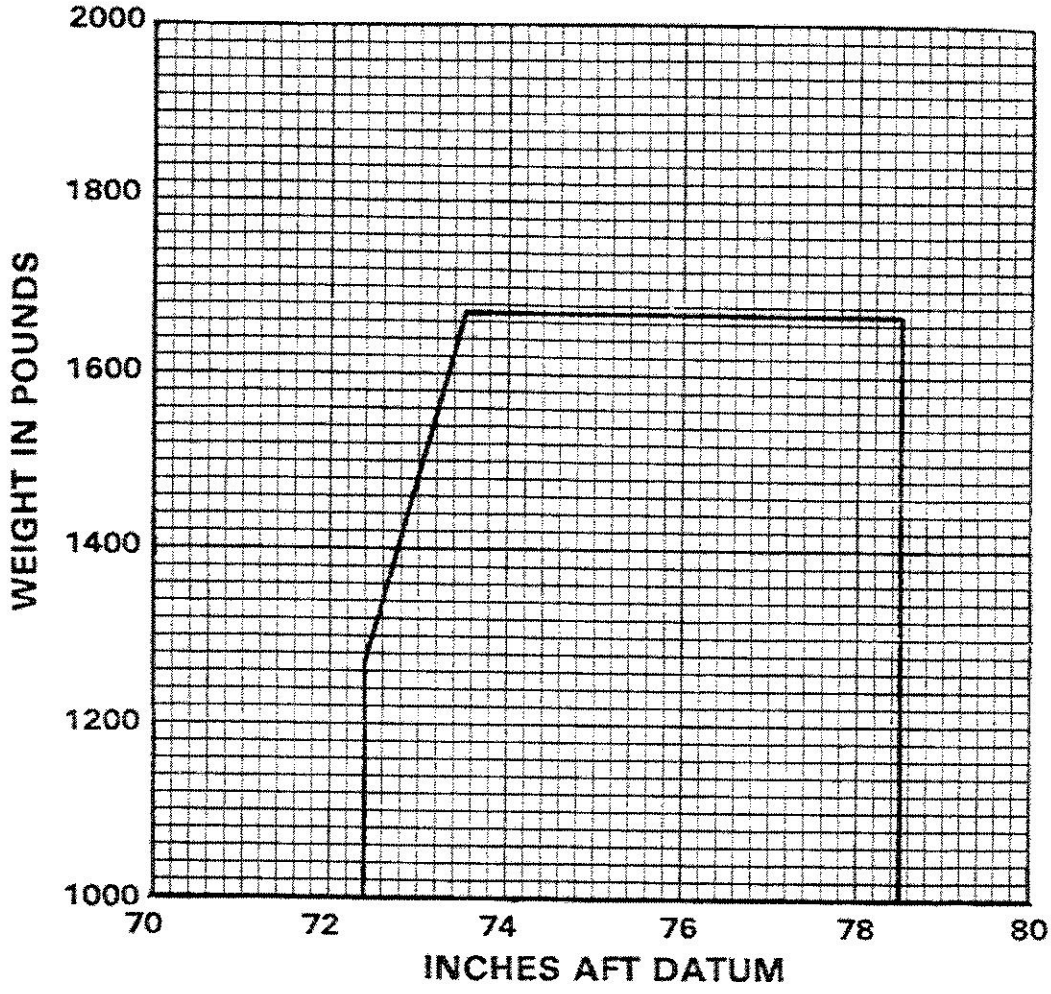
Seat Position	Arm Aft Datum (Inches)
FWD 1	80.8
2	82.3
3	83.9
4	85.5
5	87.5
AFT 6	89.5

SEAT POSTION AND CORRESPONDING ARM AFT DATUM
Figure 6-14



*Loading graph is shown with the seats in the fourth notch from the most forward position. If C.G. falls near the forward or aft limit, occupant seat positions are important; and moments should be calculated by multiplying pilot and passenger weight by appropriate arm aft datum (see Figure 6-14), rather than determined by the loading graph.

LOADING GRAPH
Figure 6-15



C. G. RANGE AND WEIGHT
Figure 6-17