

Basic Weight and Balance

3663-1. (Refer to Figure 62.) If 50 pounds of weight is located at point X and 100 pounds at point Z, how much weight must be located at point Y to balance the plank?

- A—30 pounds.
- B—50 pounds.
- C—300 pounds.

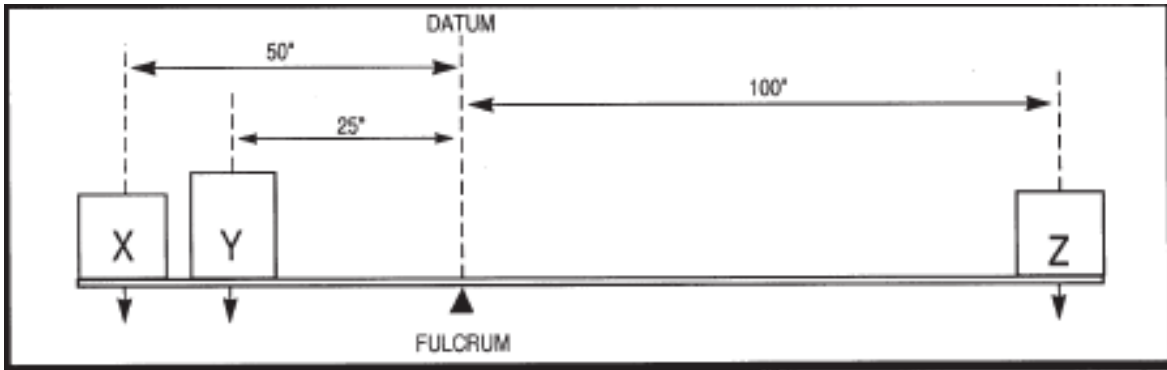


FIGURE 62.—Weight and Balance Diagram.

3665. (Refer to Figures 33 and 34.) Determine if the airplane weight and balance is within limits.

- Front seat occupants.....340 lb
- Rear seat occupants.....295 lb
- Fuel (main wing tanks).....44 gal
- Baggage.....56 lb

- A—20 pounds overweight, CG aft of aft limits.
- B—20 pounds overweight, CG within limits.
- C—20 pounds overweight, CG forward of forward limits.

WEIGHT & BALANCE / PERFORMANCE DATA			
Item	Weight (lbs)	Arm (inch)	Moment (lb-in)
Basic Empty Weight			
Pilot and Copilot			
Second Row Passengers			
Onboard Fuel ___ Gallons (x6)			
Baggage Area			
Totals:			
Calculated CG:			

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS

FRONT SEATS ARM 85		REAR SEATS ARM 121	
Weight	<u>Moment</u> 100	Weight	<u>Moment</u> 100
120	102	120	145
130	110	130	157
140	119	140	169
150	128	150	182
160	136	160	194
170	144	170	206
180	153	180	218
190	162	190	230
200	170	200	242

USABLE FUEL

MAIN WING TANKS ARM 75		
Gallons	Weight	<u>Moment</u> 100
5	30	22
10	60	45
15	90	68
20	120	90
25	150	112
30	180	135
35	210	158
40	240	180
44	264	198

BAGGAGE OR 5TH SEAT OCCUPANT ARM 140

Weight	<u>Moment</u> 100
10	14
20	28
30	42
40	56
50	70
60	84
70	98
80	112
90	126
100	140
110	154
120	168
130	182
140	196
150	210
160	224
170	238
180	252
190	266
200	280
210	294
220	308
230	322
240	336
250	350
260	364
270	378

AUXILIARY WING TANKS ARM 94

Gallons	Weight	<u>Moment</u> 100
5	30	28
10	60	56
15	90	85
19	114	107

*OIL

Quarts	Weight	<u>Moment</u> 100
10	19	5

*Included in basic Empty Weight

Empty Weight ~ 2015

MOM / 100 ~ 1554

MOMENT LIMITS vs WEIGHT

Moment limits are based on the following weight and center of gravity limit data (landing gear down).

WEIGHT CONDITION	FORWARD CG LIMIT	AFT CG LIMIT
2950 lb (takeoff or landing)	82.1	84.7
2525 lb	77.5	85.7
2475 lb or less	77.0	85.7

FIGURE 33.—Airplane Weight and Balance Tables.

MOMENT LIMITS vs WEIGHT (Continued)

Weight	Minimum Moment 100	Maximum Moment 100	Weight	Minimum Moment 100	Maximum Moment 100
2100	1617	1800	2600	2037	2224
2110	1625	1808	2610	2048	2232
2120	1632	1817	2620	2058	2239
2130	1640	1825	2630	2069	2247
2140	1648	1834	2640	2080	2255
2150	1656	1843	2650	2090	2263
2160	1663	1851	2660	2101	2271
2170	1671	1860	2670	2112	2279
2180	1679	1868	2680	2123	2287
2190	1686	1877	2690	2133	2295
2200	1694	1885	2700	2144	2303
2210	1702	1894	2710	2155	2311
2220	1709	1903	2720	2166	2319
2230	1717	1911	2730	2177	2326
2240	1725	1920	2740	2188	2334
2250	1733	1928	2750	2199	2342
2260	1740	1937	2760	2210	2350
2270	1748	1945	2770	2221	2358
2280	1756	1954	2780	2232	2366
2290	1763	1963	2790	2243	2374
2300	1771	1971	2800	2254	2381
2310	1779	1980	2810	2265	2389
2320	1786	1988	2820	2276	2397
2330	1794	1997	2830	2287	2405
2340	1802	2005	2840	2298	2413
2350	1810	2014	2850	2309	2421
2360	1817	2023	2860	2320	2428
2370	1825	2031	2870	2332	2436
2380	1833	2040	2880	2343	2444
2390	1840	2048	2890	2354	2452
2400	1848	2057	2900	2365	2460
2410	1856	2065	2910	2377	2468
2420	1863	2074	2920	2388	2475
2430	1871	2083	2930	2399	2483
2440	1879	2091	2940	2411	2491
2450	1887	2100	2950	2422	2499
2460	1894	2108			
2470	1902	2117			
2480	1911	2125			
2490	1921	2134			
2500	1932	2143			
2510	1942	2151			
2520	1953	2160			
2530	1963	2168			
2540	1974	2176			
2550	1984	2184			
2560	1995	2192			
2570	2005	2200			
2580	2016	2208			
2590	2026	2216			

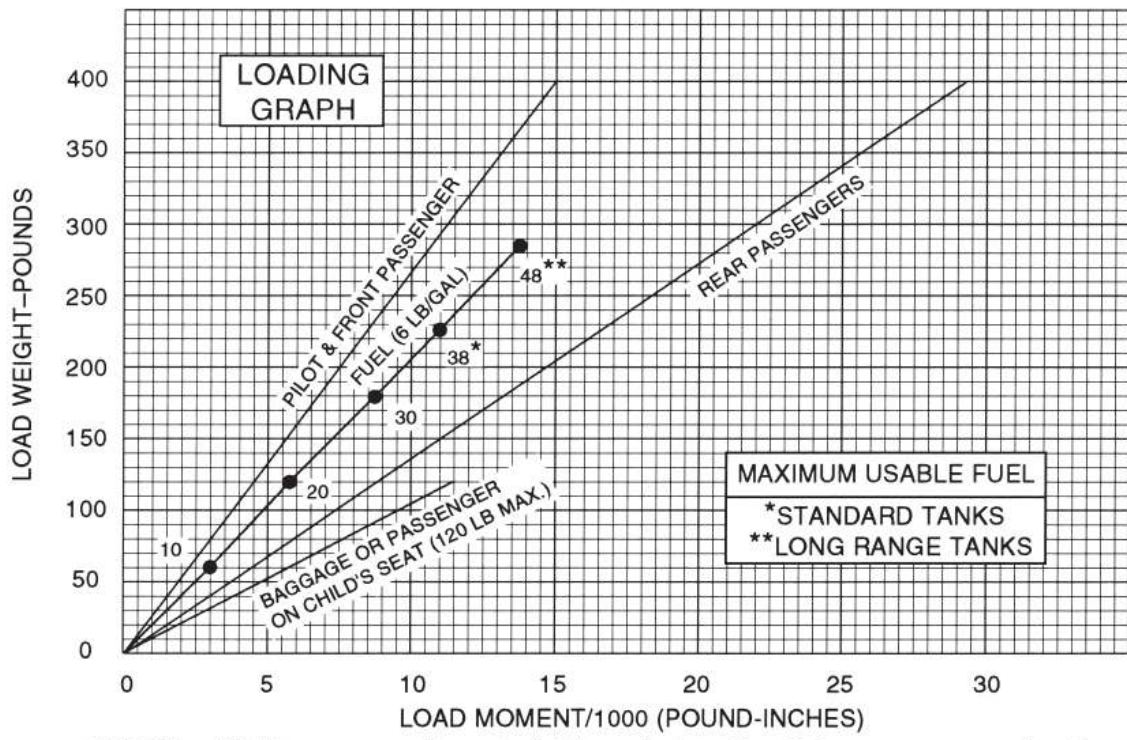
FIGURE 34.—Airplane Weight and Balance Tables.

3672. (Refer to Figure 35.) Determine the moment with the following data:

	WEIGHT (LB)	MOM/100
Empty weight	1,350	51.5
Pilot and front passenger	340	-----
Fuel (std tanks)	Capacity	-----
Oil, 8 qt	-----	-----

- A—69.9 pound-inches.
- B—74.9 pound-inches.
- C—77.6 pound-inches.

WEIGHT & BALANCE / PERFORMANCE DATA			
Item	Weight (lbs)	Arm (inch)	Moment/100
Basic Empty Weight			
Pilot and Copilot			
Onboard Fuel Gallons			
Oil, 8 qt			
Totals:			
Calculated CG:			



NOTES: (1) 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 CG range.
 (2) Engine Oil: 8 Qt. =15 Lb at -0.2 Moment/1000.

NOTE: The empty weight of this airplane does not include the weight of the oil.

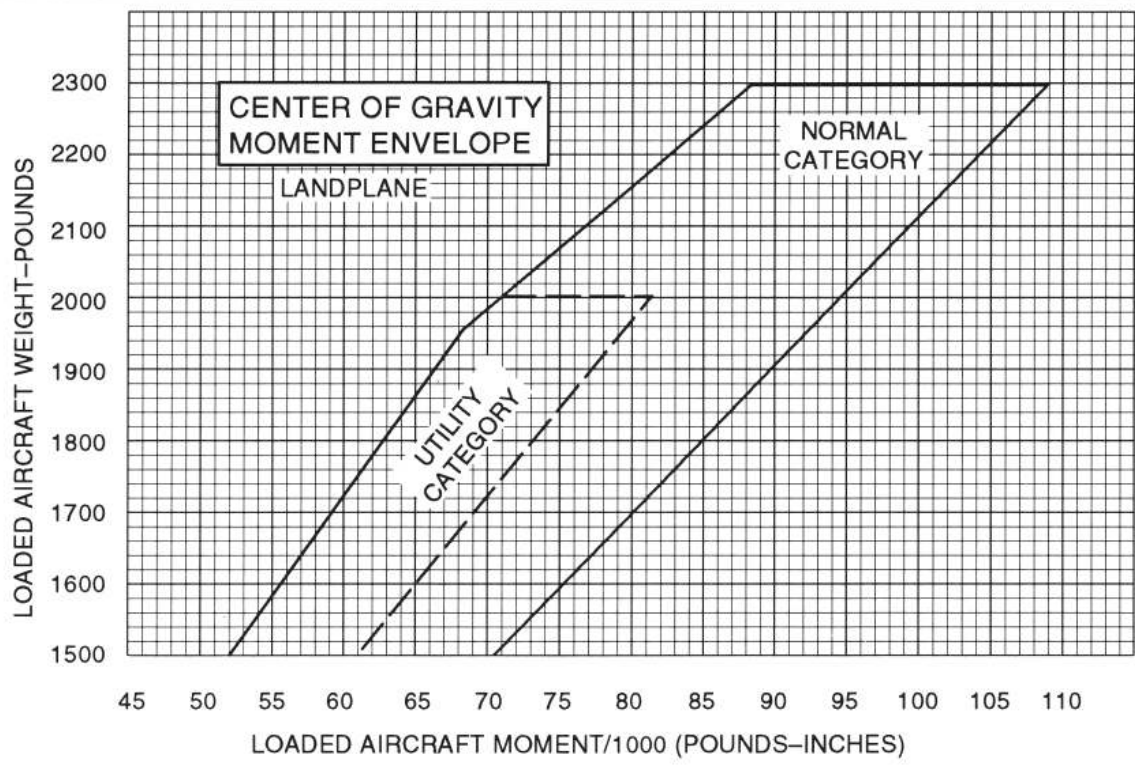


FIGURE 35.—Airplane Weight and Balance Graphs.