

(A73) 飛艇載重平衡

最近更新日期：無；更新題號：無

原始題號:0015789 題組:0 難易度:易

- (A) 1. 導致飛機超載的因素包括
(A)爬升率降低，結構負載過量，及縮短航程。(B)增加升限，增加爬升角，及增加詢航空速。(C)減低起飛空速，增加操作性能，及縮短起飛距離。

原始題號:0015790 題組:0 難易度:易

- (A) 2. 大多數飛機設計考量，即使在所有座位坐滿，行李艙擺滿所有行李，且所有油箱為滿油量時，飛機將會
(A)顯然超重。(B)低於最大起飛總重。(C)達最大起飛總重。

原始題號:0015791 題組:0 難易度:易

- (A) 3. 操縱飛機時，機長負責使用
(A)最新的載重平衡數據。(B)製造廠商的載重平衡數據。(C)近期的載重平衡數據。

原始題號:0015792 題組:1 難易度:中

- (C) 4. (參照圖1)若50磅置於X點，100磅置於Z點，在Y點需放置多少重量，以獲得平衡?
(如圖A73_Fig1)
(A)30磅。(B)50磅。(C)300磅。

題目圖：

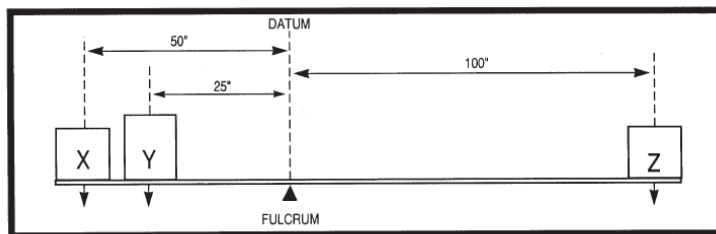


FIGURE 62.—Weight and Balance Diagram.

原始題號:0015793 題組:1 難易度:中

- (A) 5. (參照圖2)500磅重量應移向何處，以使支點獲得平衡?
(如圖A73_Fig2)
(A)向左一呎。(B)向右一呎。(C)向右4.5呎。

題目圖：

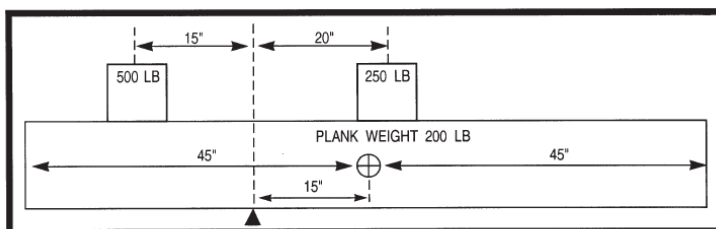


FIGURE 61.—Weight and Balance Diagram.

原始題號:0015794 題組:0 難易度:易

- (A) 6. 哪些項次包括在航空器空重中?
(A)不可用之燃油與無法漏放之滑油。(B)只有機身，發動機，及選用裝備。(C)全油箱及引擎滑油容量。

原始題號:0015795 題組:0 難易度:中

- (C) 7. 航空器總重超過最大許可載重110磅，若需漏放燃油(汽油)以使航空器重量在限制範圍內，應漏放多少燃油？
(A)15.7加侖。(B)16.2加侖。(C)18.4加侖。

原始題號:0015796 題組:0 難易度:中

- (C) 8. 若航空器總重超過最大許可載重90磅，且需漏放燃油(汽油)以使航空器重量在限制範圍內，應漏放多少燃油？
(A)10加侖。(B)12加侖。(C)15加侖。

原始題號:0015797 題組:1 難易度:中

- (A) 9. (參照圖5表33與34) 航空器落地後，前座乘客(180磅)離機，後座乘客(204磅)則移至前座位置。若乘客移動前的航空器總重為2,690磅，力距/100為2,260，對航空器重心有何影響？
(如圖A73_Fig5)
(A)重心前移約3吋。(B)重量改變，但重心不影響。(C)重心前移約0.1吋。

題目圖：

USEFUL LOAD WEIGHTS AND MOMENTS

OCCUPANTS			
FRONT SEATS ARM 85		REAR SEATS ARM 121	
Weight	Moment 100	Weight	Moment 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

BAGGAGE OR 5TH SEAT OCCUPANT
ARM 140

Weight	Moment 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

USABLE FUEL			
MAIN WING TANKS ARM 75			
Gallons	Weight	Moment 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	

AUXILIARY WING TANKS
ARM 94

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

*OIL

Quarts	Weight	Moment 100	
10	19	5	

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

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			
2310	1779	1980	2800	2254	2381
2320	1786	1988	2810	2265	2389
2330	1794	1997	2820	2276	2397
2340	1802	2005	2830	2287	2405
2350	1810	2014	2840	2298	2413
2360	1817	2023	2850	2309	2421
2370	1825	2031	2860	2320	2428
2380	1833	2040	2870	2332	2436
2390	1840	2048	2880	2343	2444
			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			

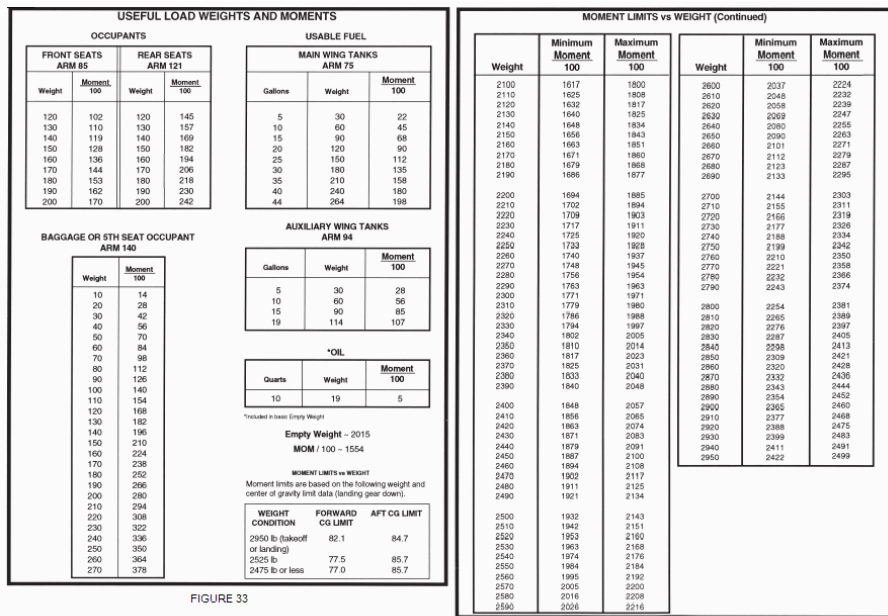
FIGURE 33

FIGURE 34

原始題號:0015798 題組:2 難易度:中

- (B) 10. (參照圖5表33與34) 哪一個方式能調整航空器至最大起飛載重及重心限制範圍內？
前座乘客：425磅，後座乘客：300磅，主油箱：44加侖。
(如圖A73_Fig5)
(A)漏放12加侖燃油。(B)漏放9加侖燃油。(C)自主油箱轉移12加侖燃油至副油箱。

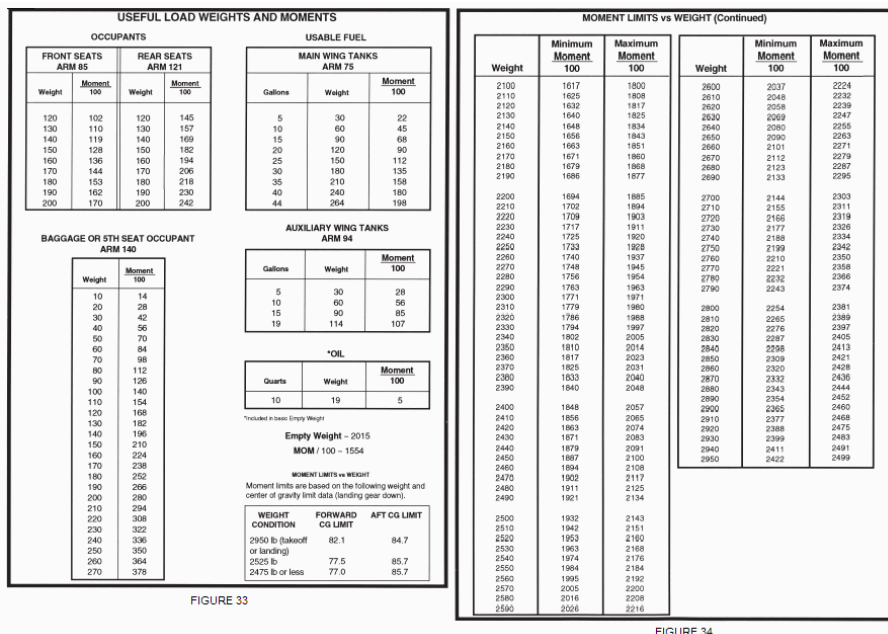
題目圖：



原始題號:0015799 題組:3 難易度:中

- (A) 11. (參照圖5表33與34) 如航空器起飛時之重量為2,890磅，力距/100為2,452，則35加侖之燃油(主油箱)消耗對航空器載重與平衡影響為何？
(如圖A73_Fig5)
(A)重量減少210磅，重心超過後重心範圍限制。(B)重量減少210磅，重心在限制範圍內。(C)重量減少2,680磅，重心前移。

題目圖：



原始題號:0015800 題組:4 難易度:中

- (B) 12. (參照圖5表33與34) 若航空器裝載方式如下，則應採取何措施以維持航空器在重心限制範圍內？
前座乘客：411磅，後座乘客：100磅，主油箱：44加侖。
(如圖A73_Fig5)
(A)加滿副油箱。(B)在行李艙加100磅重量。(C)自主油箱轉移10加侖燃油至副油箱。

題目圖：

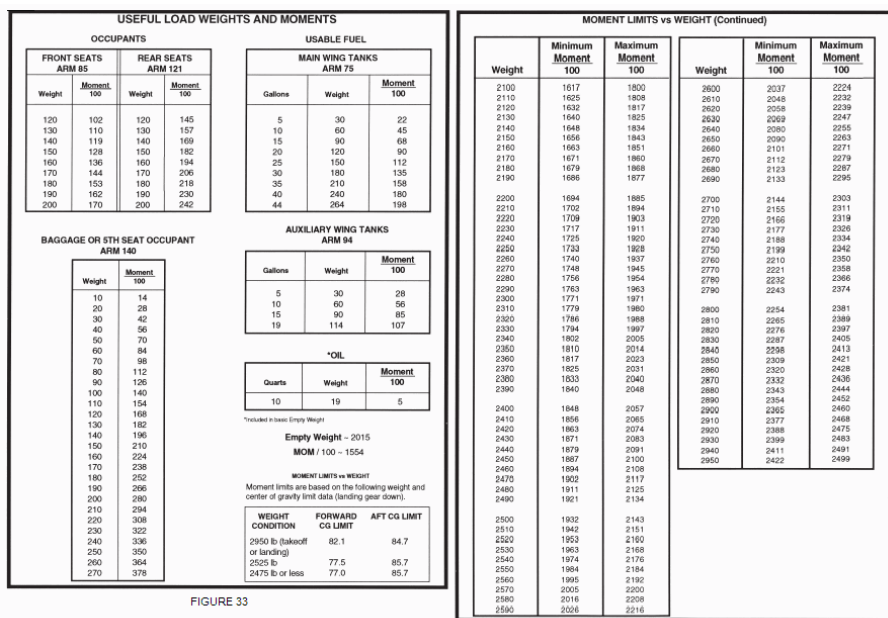
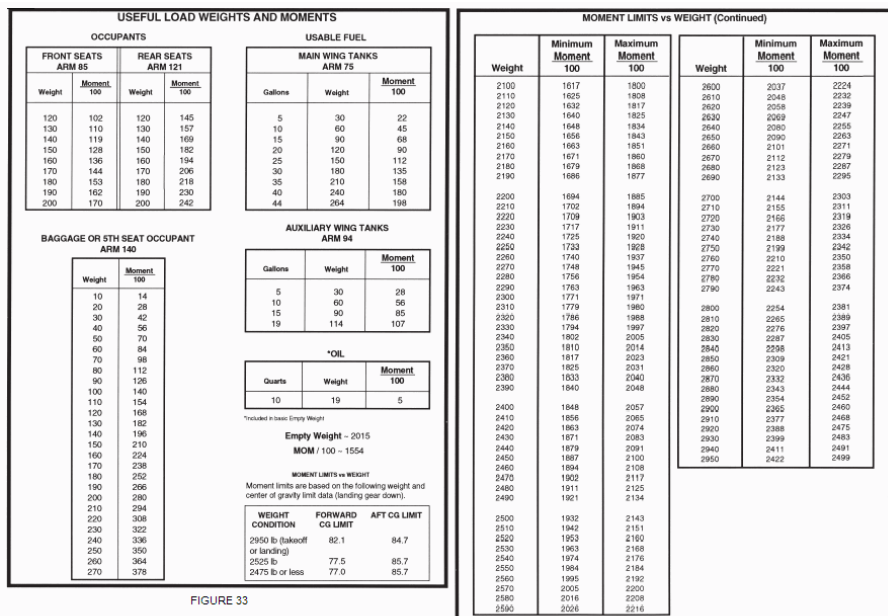


FIGURE 34

原始題號:0015801 題組:5 難易度:中

- (B) 13. (參照圖5表33與34) 決定航空器之載重與平衡是否在限制範圍內。前座乘客：340磅，後座乘客：295磅，燃油(主翼油箱)：44加侖，行李：56磅。(如圖A73_Fig5)
- (A)超重20磅，重心超過後重心限制範圍。(B)超重20磅，重心在限制範圍內。(C)超重20磅，重心超過前重心限制範圍。

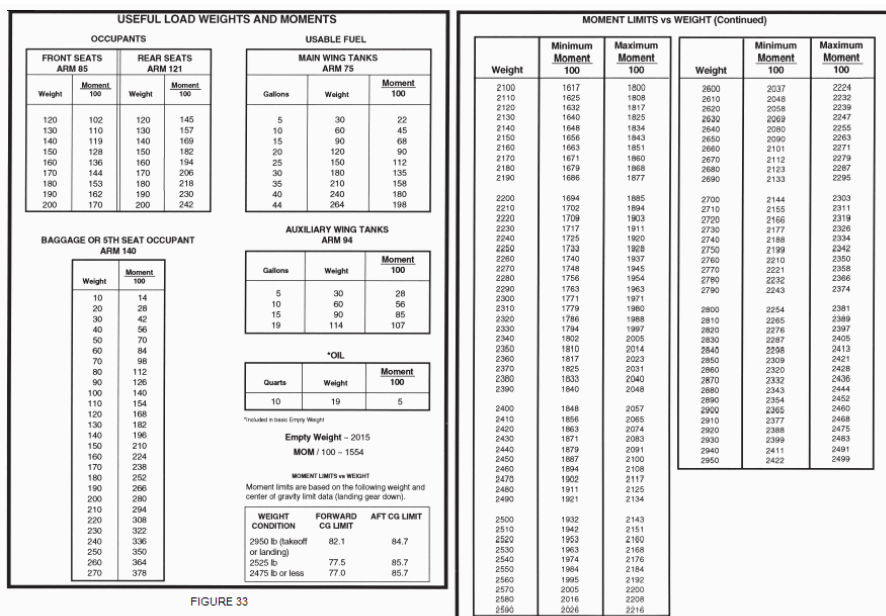
題目圖：



原始題號:0015802 題組:6 難易度:中

- (A) 14. (參照圖5表33與34) 當航空器載重情形如下時，最大行李載重量為何？前座乘客：387磅，後座乘客：293磅，燃油：35加侖。(如圖A73_Fig5)
- (A)45磅。(B)63磅。(C)220磅。

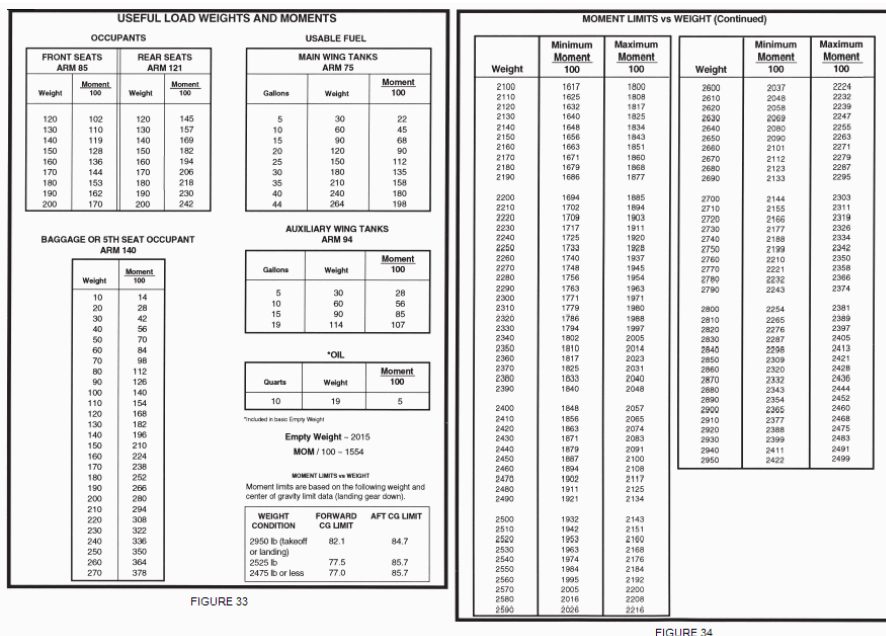
題目圖：



原始題號:0015803 題組:7 難易度:中

- (B) 15. (參照圖5表33與34) 計算載重與平衡，並決定航空器之重心與重量是否在限制範圍內。
前座乘客：350磅，後座乘客：325磅，行李：27磅，燃油：35加侖。
(如圖A73_Fig5)
(A)重心81.7，超過前重心限制。(B)重心83.4，在重心範圍內。(C)重心84.1，在重心範圍內。

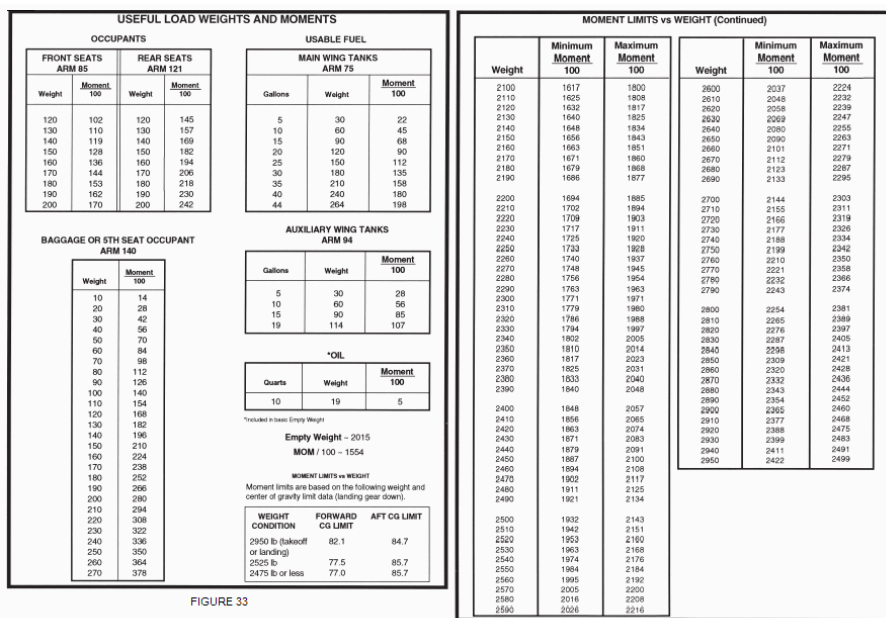
題目圖：



原始題號:0015804 題組:8 難易度:中

- (C) 16. (參照圖5表33與34) 決定航空器之載重與平衡是否在限制範圍內。 前座乘客：415磅，後座乘客：110磅，主油箱燃油：44加侖，輔助油箱：19加侖，行李：32磅。
(如圖A73_Fig5)
(A)超重19磅，重心在限制範圍內。(B)超重19磅，重心超過前重心限制。(C)重量在限制範圍內，重心超過限制範圍。

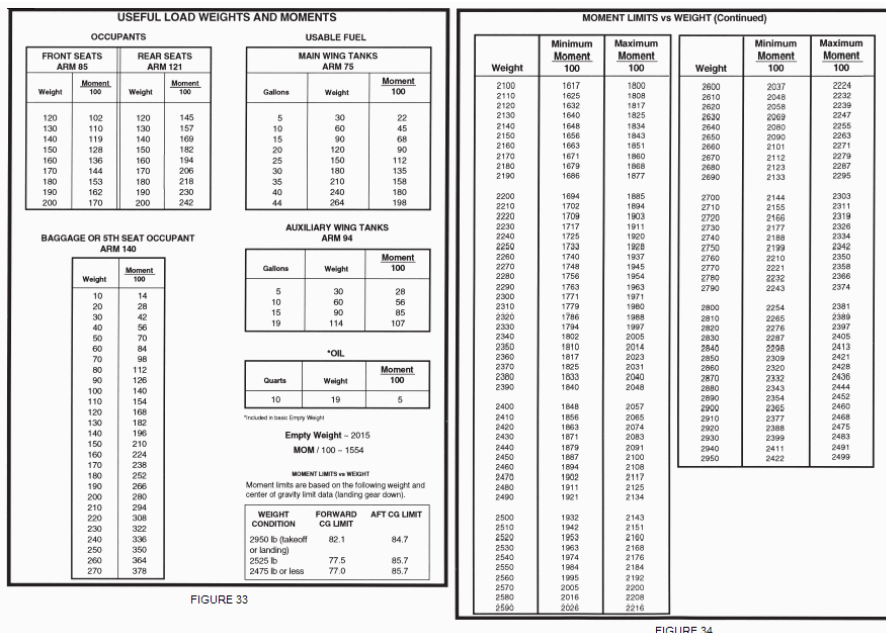
題目圖：



原始題號:0015805 題組:9 難易度:中

- (A) 17. (參照圖5表33與34) 飛機以下列方式裝載時，其最大行李重量為何？前座乘客：387磅；後座乘客：293磅；燃油：35加侖。
(如圖A73_Fig5)
(A)45磅。(B)63 磅。(C)220磅。

題目圖：



原始題號:0015806 題組:0 難易度:中

- (A) 18. 飛機載重之重心位於最後重心限制位置，將造成飛機在
(A)任何空速皆不穩定。(B)低速時較不穩定，但高速時較穩定。(C)低速時較穩定，但高速時較不穩定。

原始題號:0015807 題組:0 難易度:中

- (B) 19. 已知：空重：1,495.0磅；力臂：101.4吋；力距：151,593.0吋-磅。飛行員與乘客重量：380.0磅；力臂：64吋。燃油（30加侖可用，無備用）：力臂：96吋。重心距離基準點後多遠？
(A)CG 92.44。(B)CG 94.01。(C)CG 119.8。

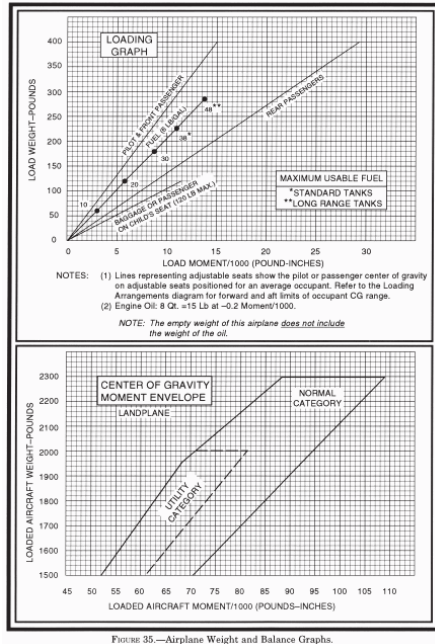
原始題號:0015808 題組:0 難易度:中

- (B) 20. 如飛機載重之重心超出最後重心限制，這架飛機的飛行員將遭遇非所望的飛行特性為
(A)較長的起飛距離。(B)難以自失速狀況下改出。(C)在高於正常空速時失速。

原始題號:0015809 題組:1 難易度:中

- (C) 21. (參照圖4)如飛機以下列方式裝載時，其最大燃油量為何？空重：1,350磅；力距/1,000：51.5磅-吋。飛行員及前座乘客重量：340磅；後座乘客：310磅；行李重：45磅；滑油8夸托。
(如圖A73_Fig4)
(A)24 加侖。(B)32 加侖。(C)40 加侖。

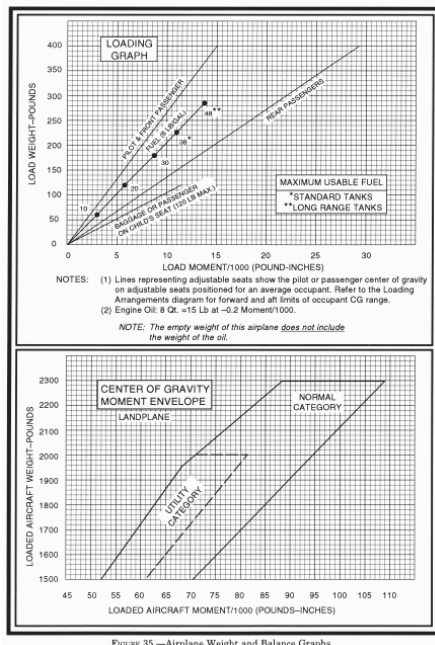
題目圖：



原始題號:0015810 題組:2 難易度:中

- (A) 22. (參照圖4)如飛機裝載時需維持在力距包線範圍內，其最大行李重量為何？空重：1,350磅；力距/1,000：51.5磅-吋。飛行員及前座乘客重量：250磅；後座乘客：400磅；燃油：30加侖；滑油8夸托：-0.2力距/1,000。
(如圖A73_Fig4)
(A)105 磅。(B)110磅。(C)120 磅。

題目圖：



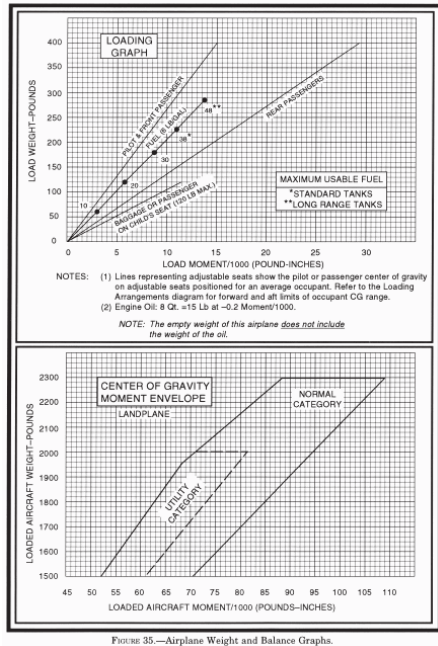
原始題號:0015811 題組:3 難易度:中

- (B) 23. (參照圖4)計算飛機力距，並決定屬於哪一類？空重：1,350磅；力距/1,000：51.5磅-吋。飛行員及前座乘客重量：310磅；後座乘客：96磅；燃油：38加侖；滑油8夸托：-0.2力距/1,000。

(如圖A73_Fig4)

(A)79.2，通用類。(B)80.8，通用類。(C)81.2，正常類。

題目圖：



原始題號:0015789 題組:0 難易度:易

- (A) 24. Problems caused by overloading an aircraft include
(A)reduced climb rate, excessive structural loads, and shortened cruising range.
(B)increased service ceiling, increased angle of climb, and increased cruising speed. (C)slower takeoff speed, increased maneuverability, and shorter takeoff roll.

原始題號:0015790 題組:0 難易度:易

- (A) 25. Most aircraft are so designed that if all seats are occupied, all baggage allowed by the baggage compartment structure is carried, and all the fuel tanks are full, the aircraft will be
(A)grossly overloaded. (B)under maximum gross weight. (C)at maximum gross weight.

原始題號:0015791 題組:0 難易度:易

- (A) 26. When operating an aircraft, the pilot-in-command is responsible for using
(A)the most current weight and balance data. (B)weight and balance data from the factory. (C)recent weight and balance data.

原始題號:0015792 題組:1 難易度:中

- (C) 27. (Refer to figure 1.) 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?(如圖A73_Fig1)
(A)30 pounds. (B)50 pounds. (C)300 pounds.

題目圖：

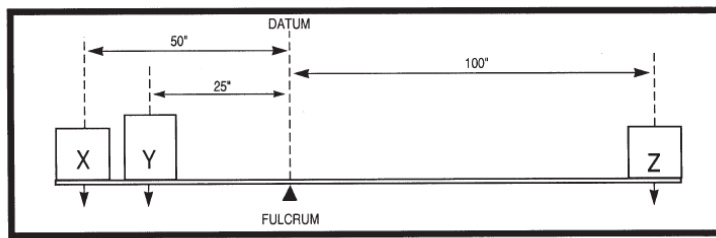


FIGURE 62.—Weight and Balance Diagram.

原始題號:0015793 題組:1 難易度:中

- (A) 28. (Refer to figure 2.) How should the 500-pound weight be shifted to balance the plank on the fulcrum?(如圖A73_Fig2)
 (A)1 inch to the left. (B)1 inch to the right. (C)4.5 inches to the right.

題目圖：

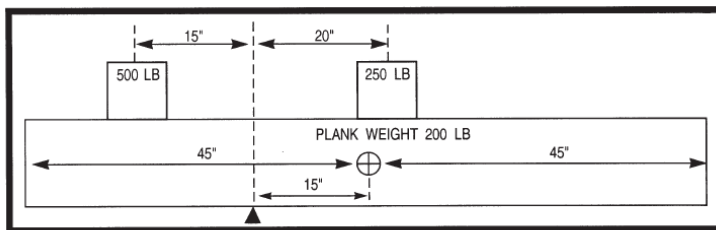


FIGURE 61.—Weight and Balance Diagram.

原始題號:0015794 題組:0 難易度:易

- (A) 29. Which items are included in the empty weight of an aircraft?
 (A)Unusable fuel and undrainable oil. (B)Only the airframe, powerplant, and optional equipment. (C)Full fuel tanks and engine oil to capacity.

原始題號:0015795 題組:0 難易度:中

- (C) 30. An aircraft is loaded 110 pounds over maximum certificated gross weight. If fuel (gasoline) is drained to bring the aircraft weight within limits, how much fuel should be drained?
 (A)15.7 gallons. (B)16.2 gallons. (C)18.4 gallons.

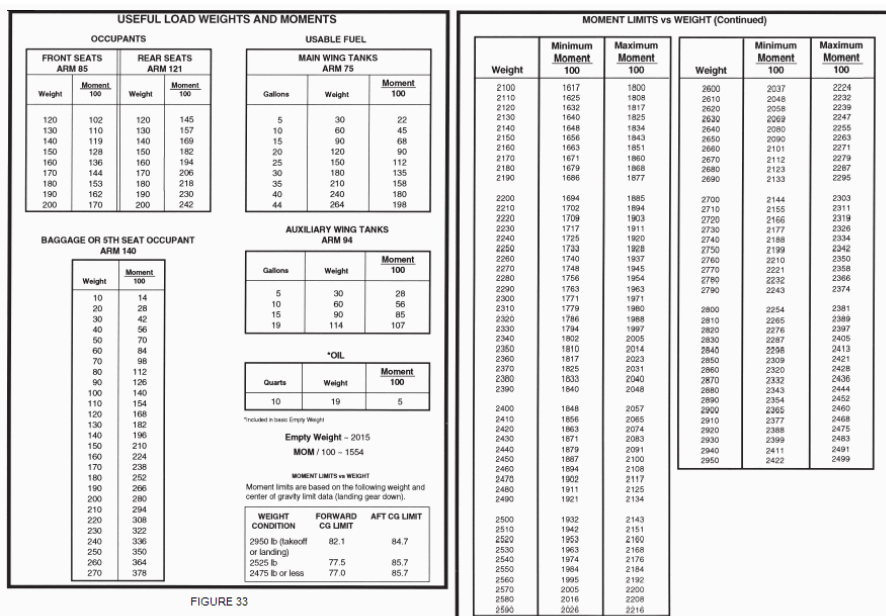
原始題號:0015796 題組:0 難易度:中

- (C) 31. If an aircraft is loaded 90 pounds over maximum certificated gross weight and fuel (gasoline) is drained to bring the aircraft weight within limits, how much fuel should be drained?
 (A)10 gallons. (B)12 gallons. (C)15 gallons.

原始題號:0015797 題組:1 難易度:中

- (A) 32. (Refer to Table 33 and 34 of Figure 5.) Upon landing, the front passenger (180 pounds) departs the airplane. A rear passenger (204 pounds) moves to the front passenger position. What effect does this have on the CG if the airplane weighted 2,690 pounds and the MOM/100 was 2,260 just prior to the passenger transfer?(如圖A73_Fig5)
 (A)The CG moves forward approximately 3 inches. (B)The weight changes, but the CG is not affected. (C)The CG moves forward approximately 0.1 inch.

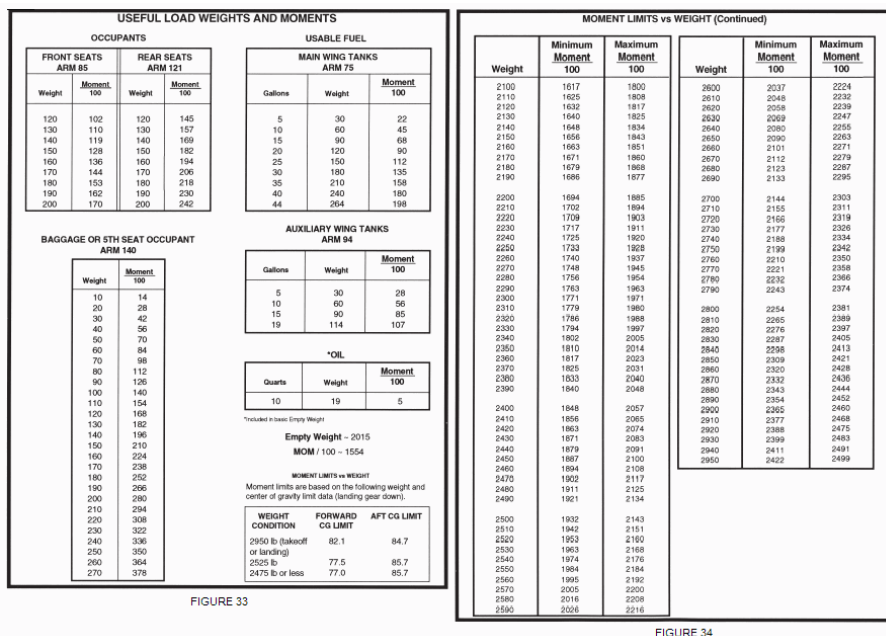
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原始題號:0015798 題組:2 難易度:中

- (B) 33. (Refer to Table 33 and 34 of Figure 5.) Which action can adjust the weight to maximum gross weight and the CG within limits for takeoff? Front seat occupants-425 lb, Rear seat occupants-300 lb, Fuel main tanks-44 gal(如圖 A73_Fig5)
- (A)Drain 12 gallons of fuel. (B)Drain 9 gallons of fuel. (C)Transfer 12 gallons of fuel from the main tanks to the auxiliary tanks.

題目圖：



原始題號:0015799 題組:3 難易度:中

- (A) 34. (Refer to Table 33 and 34 of Figure 5.) What effect does a 35-gallon fuel burn (main tanks) have on the weight and balance if the airplane weighted 2,890 pounds and the MOM/100 was 2,452 at takeoff?(如圖 A73_Fig5)
- (A)Weight is reduced by 210 pounds and the CG is aft of limits. (B)Weight is reduced by 210 pounds and the CG is unaffected. (C)Weight is reduced by 2,680 pounds and the CG moves forward.

題目圖：

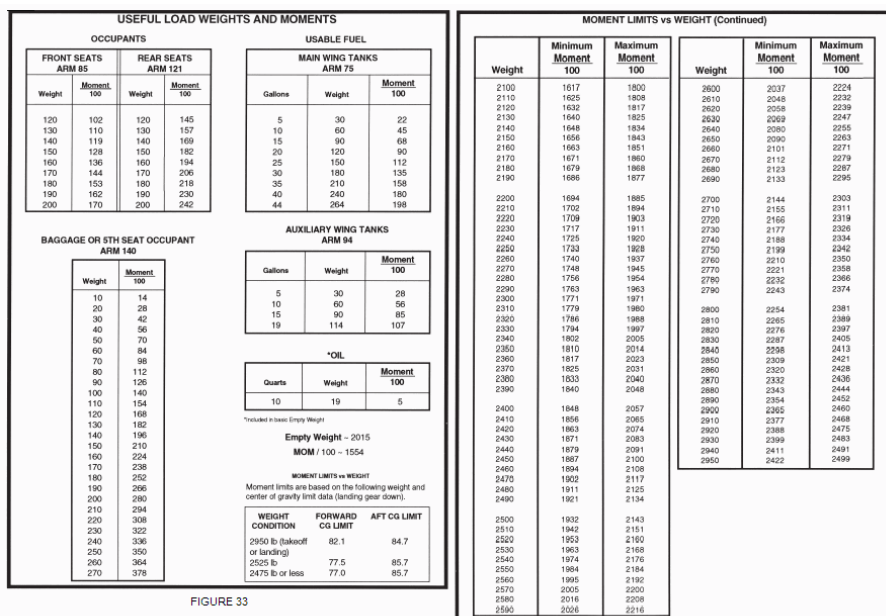


FIGURE 33

FIGURE 34

原始題號:0015800 題組:4 難易度:中

- (B) 35. (Refer to Table 33 and 34 of Figure 5.) With the airplane loaded as follows what action can be taken to balance the airplane? Front seat occupants-411 lb, Rear seat occupants-100 lb, Fuel main tanks-44 gal(如圖A73_Fig5)
- (A) Fill the auxiliary wing tanks. (B) Add a 100-pound weight to the baggage compartment. (C) Transfer 10 gallons of fuel from the main tanks to the auxiliary tanks.

題目圖：

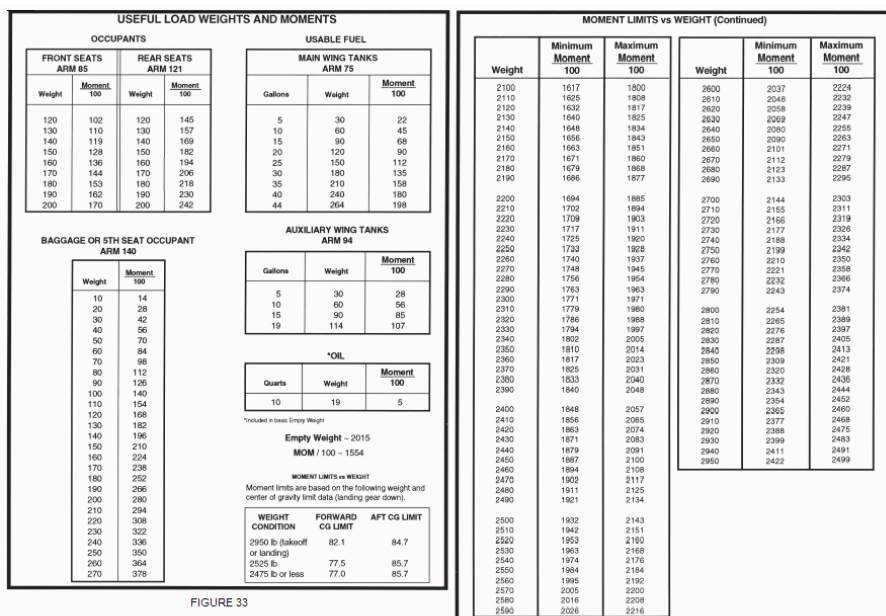


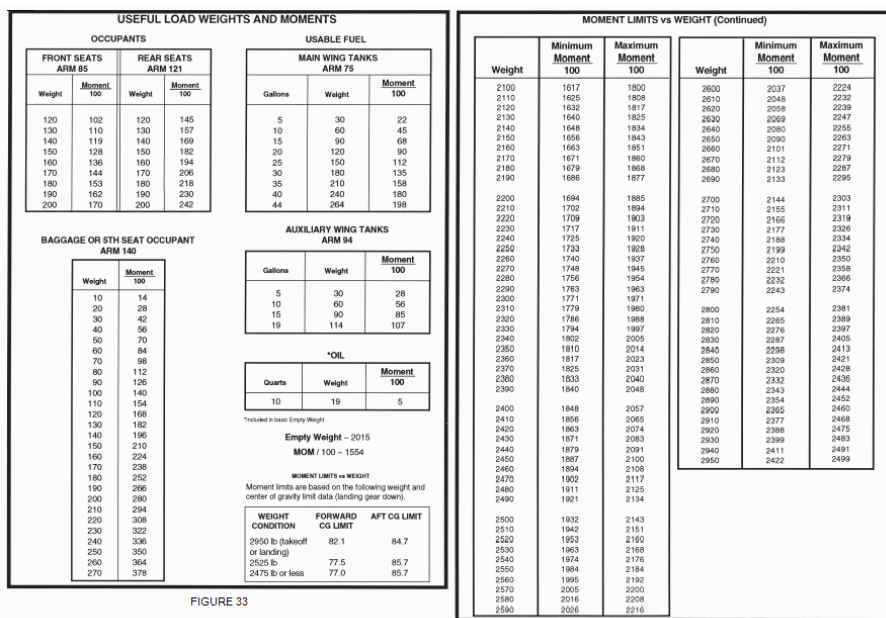
FIGURE 33

FIGURE 34

原始題號:0015801 題組:5 難易度:中

- (B) 36. (Refer to Table 33 and 34 of Figure 5.) 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(如圖A73_Fig5)
- (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.

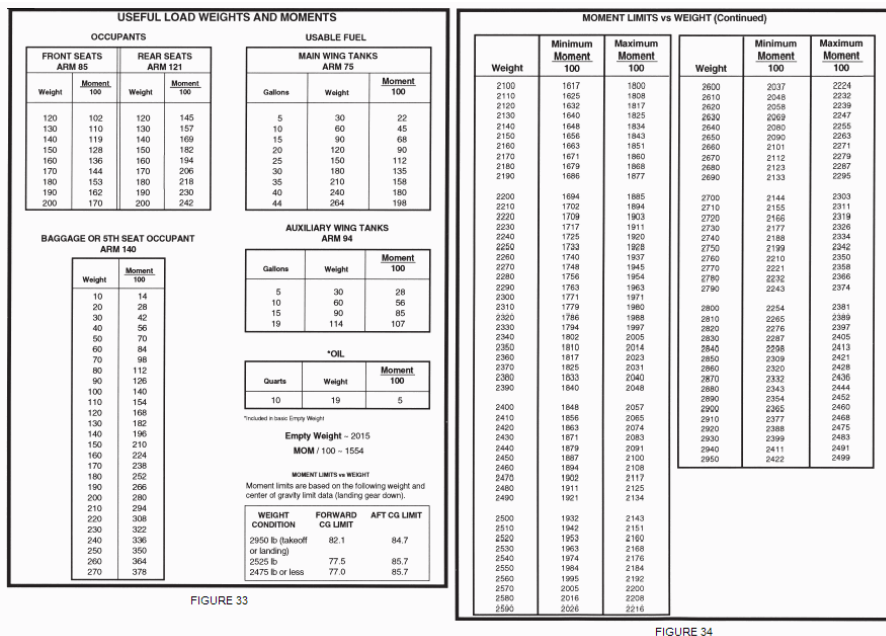
題目圖：



原始題號:0015802 題組:6 難易度:中

- (A) 37. (Refer to Table 33 and 34 of Figure 5.) What is the maximum amount of baggage that can be carried when the airplane is loaded as follows? Front seat occupants: 387 lb, Rear seat occupants: 293 lb, Fuel: 35 gal(如圖A73_Fig5)
- (A)45 pounds. (B)63 pounds. (C)220 pounds.

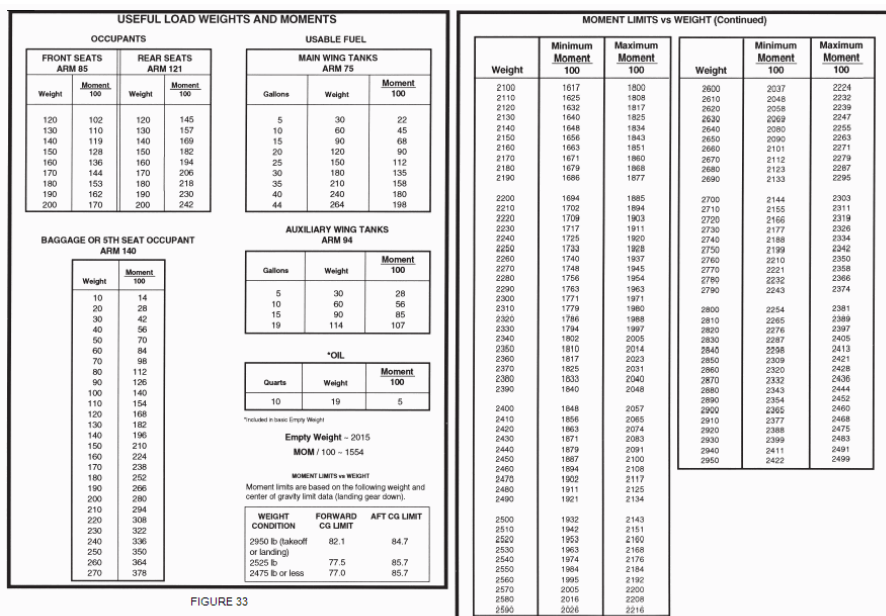
題目圖：



原始題號:0015803 題組:7 難易度:中

- (B) 38. (Refer to Table 33 and 34 of Figure 5.) Calculate the weight and balance and determine if the CG and the weight of the airplane are within limits. Front seat occupants-350 lb, Rear seat occupants-325 lb, Baggage-27 lb, Fuel-35 gal(如圖A73_Fig5)
- (A)CG 81.7, out of limits forward. (B)CG 83.4, within limits. (C)CG 84.1, within limits.

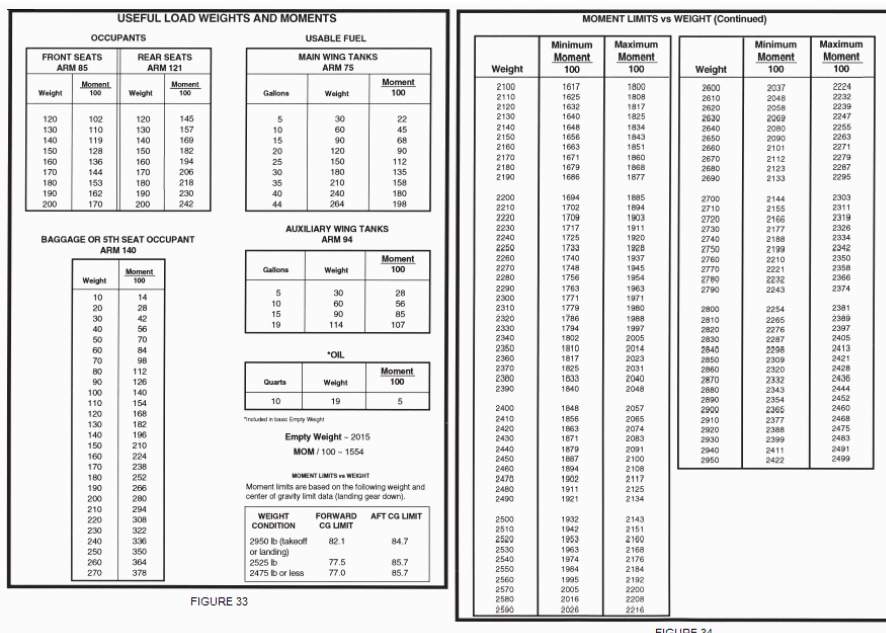
題目圖：



原始題號:0015804 題組:8 難易度:中

- (C) 39. (Refer to Table 33 and 34 of Figure 5.) Determine if the airplane weight and balance is within limits. Front seat occupants-415 lb, Rear seat occupants-110 lb, Fuel main tanks-44 gal, Fuel aux. tanks-19 gal, Baggage-32 lb(如圖A73_Fig5)
- (A)19 pounds overweight, CG within limits. (B)19 pounds overweight, CG out of limits forward. (C)Weight within limits, CG out of limits.

題目圖：



原始題號:0015805 題組:9 難易度:中

- (A) 40. (Refer to Table 33 and 34 of Figure 5.) What is the maximum amount of baggage that can be carried when the airplane is loaded as follows?Front seat occupants: 387 lb, Rear seat occupants: 293 lb, Fuel: 35 gal.(如圖A73_Fig5)
- (A)45 pounds. (B)63 pounds. (C)220 pounds.

題目圖：

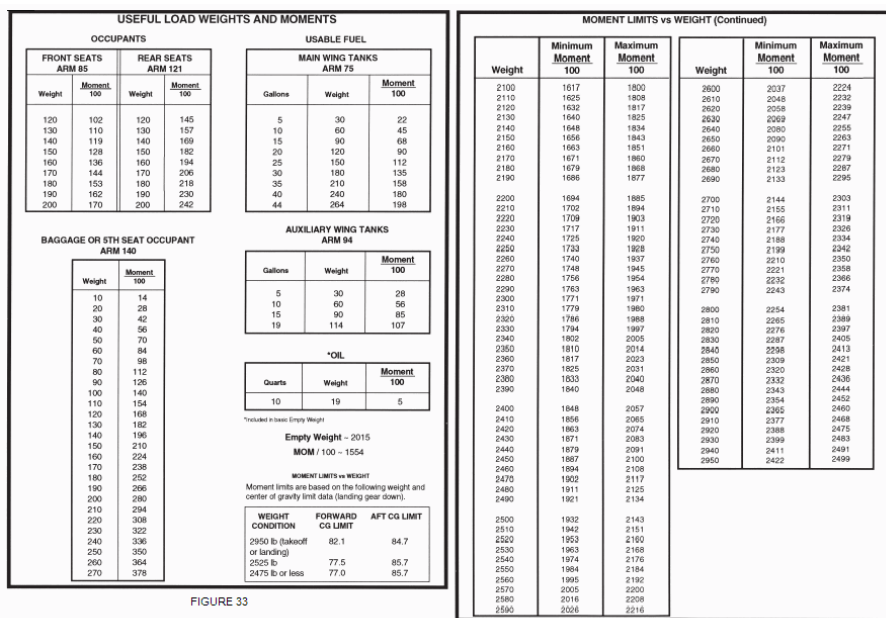


FIGURE 33

FIGURE 34

原始題號:0015806 題組:0 難易度:中

- (A) 41. Loading an airplane to the most aft CG will cause the airplane to be
(A)less stable at all speeds. (B)less stable at slow speeds, but more stable at high speeds. (C)less stable at high speeds, but more stable at low speeds.

原始題號:0015807 題組:0 難易度:中

- (B) 42. GIVEN: Empty weight: 1,495.0 LB; ARM: 101.4 IN; MOMENT: 151,593.0 LB-IN. Pilot and passengers: 380.0 LB; ARM: 64 IN. Fuel (30 gal usable no reserve) ARM:96 IN. The CG is located how far aft of datum?
(A)CG 92.44. (B)CG 94.01. (C)CG 119.8.

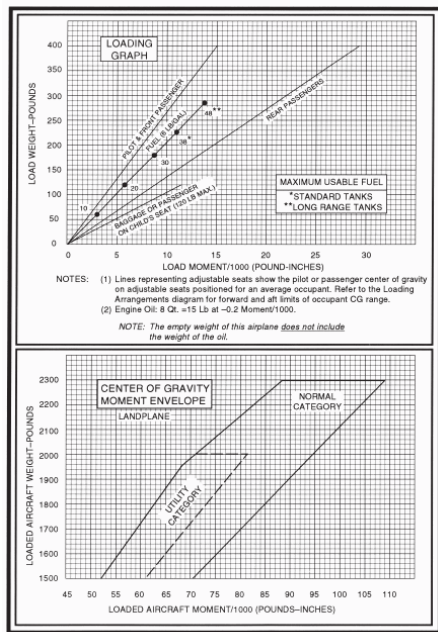
原始題號:0015808 題組:0 難易度:中

- (B) 43. An airplane has been loaded in such a manner that the CG is located aft of the aft CG limit. One undesirable flight characteristic a pilot might experience with this airplane would be
(A)a longer takeoff run. (B)difficulty in recovering from a stalled condition. (C)stalling at higher-than-normal airspeed.

原始題號:0015809 題組:1 難易度:中

- (C) 44. (Refer to figure 4.) What is the maximum amount of fuel that may be aboard the airplane on takeoff if loaded as follows? Empty weight: 1,350 LB; MOMENT/1,000: 51.5 LB-IN. Pilot and front seat passengers: 340 LB; Rear seat passengers: 310 LB; Baggage: 45 LB; Oil, 8 qt. (如圖A73_Fig4)
(A)24 gallons. (B)32 gallons. (C)40 gallons.

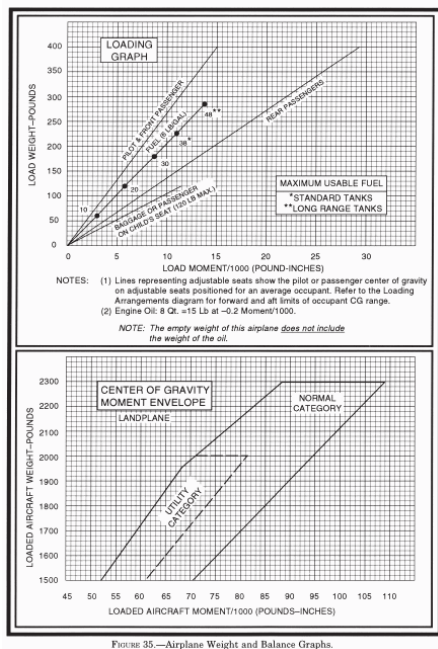
題目圖：



原始題號:0015810 題組:2 難易度:中

- (A) 45. (Refer to figure 4.) What is the maximum amount of baggage that may be loaded aboard the airplane for the CG to remain within the moment envelope? Empty weight: 1,350 LB; MOMENT/1,000: 51.5 LB-IN. Pilot and front seat passengers: 250 LB; Rear seat passengers: 400 LB; Fuel, 30 gal; Oil, 8 qt: -0.2 MOMENT/1,000. (如圖A73_Fig4)
- (A)105 pounds. (B)110 pounds. (C)120 pounds.

題目圖：



原始題號:0015811 題組:3 難易度:中

- (B) 46. (Refer to figure 4.) Calculate the moment of the airplane and determine which category is applicable. Empty weight: 1,350 LB; MOMENT/1,000: 51.5 LB-IN. Pilot and front seat passengers:310 LB; Rear seat passengers: 96 LB; Fuel, 38 gal; Oil, 8 qt: -0.2 MOMENT/1,000. (如圖A73_Fig4)
- (A)79.2, utility category. (B)80.8, utility category. (C)81.2, normal category.

題目圖：

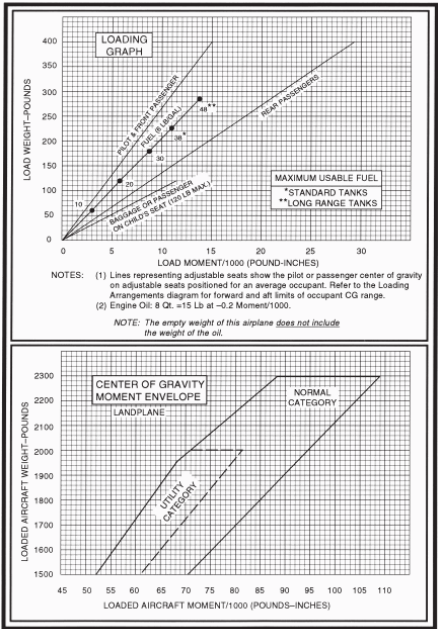


FIGURE 35.—Airplane Weight and Balance Graphs.

