

In Class Weight and Balance Exercise

N141BB - Empty Weight 1186 lbs

Pilot – 178 lbs

Co-Pilot - 145 lbs

Baggage – 55 lbs

Fuel – 20 Gallons

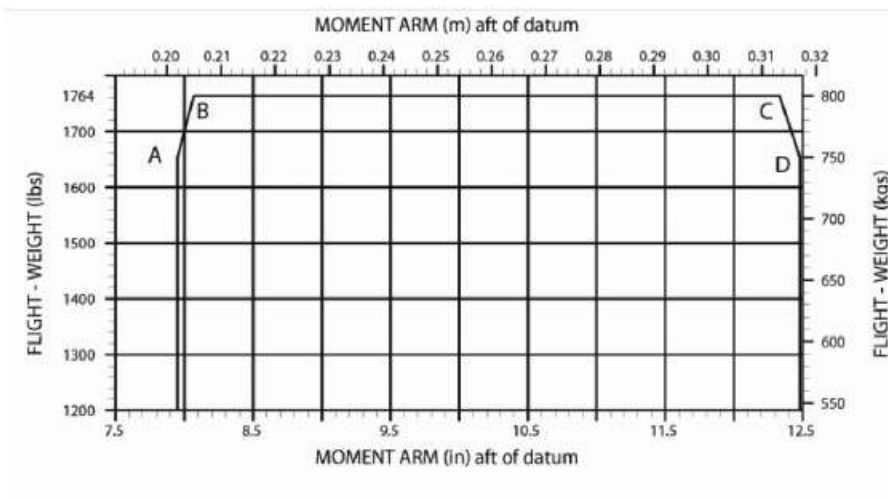
Using Figures 1 and 2

1. Total Weight (lbs) _____
2. Total Moment (inch-lbs) _____
3. CG (inches)_____
4. After you fly 2 hours; 11.5 gallons of fuel have been burned off, what is the new CG is:

5. Can this flight be made legally? ____ If not, why not? _____

Calculation of the Load Limits	DA20-C1 (EXAMPLE)		YOUR DA20-C1	
	Weight [lbs] (Weight [kg])	Moment [in.lbs] ([kgm])	Weight [lbs] (Weight [kg])	Moment [in.lbs] ([kgm])
1. Empty Weight (use the data for your airplane recorded in the equipment list, including unusable fuel and lubricant).	1153 (523)	12562 (144.740)		
2. Pilot and Passenger: Lever Arm: 0.143 m (5.63 in)	359 (163)	2021 (23.286)		
3. Baggage: Max. Wt. 44 lbs (20 kg) Lever Arm: 0.824 m (32.44 in)	-- (--)	-- (--)		
4. Baggage Compartment Extension: Max. Wt. 44 lbs (20 kg) Lever Arm: 1.575 m (62.0 in)	-- (--)	-- (--)		
5. *Combined Baggage Max. Wt. 44 lbs (20 kg) Lever Arm: 1.20 m (47.22 in)	-- (--)	-- (--)		
6. Total Weight and Total Moment with empty fuel tank (sum of 1. - 3.)	1512 (686)	14583 (168.026)		
7. Usable Fuel Load (6.01 lbs. per US gal./0.72 kg per liter) Lever Arm (32.44 in) (0.824 m)	93 (42)	3017 (34.762)		
8. Total Weight and Total Moment, taking fuel into account (sum of 6. and 7.)	1605 (728)	17600 (202.788)		
9. Find the values for the total weight (1512 lbs and 1605 lbs) and the total moment (14583 in lbs and 17600 in. lbs) in the center of gravity diagram. Since they are within the limitation range, the loading is permissible.				

Figure 1, DA20-C1 W&B Worksheet



Points	Gross Weight		Arm (aft of datum)	
	(lbs)	(kgs)	(in)	(m)
A	1653	750	7.95	.202
B	1764	800	8.07	.205
C	1764	800	12.16	.309
D	1653	750	12.48	.317

Figure 2, CG Envelope for Diamond DA20-C1