

Mooney Aircraft, Inc.

Kerrville, Texas

MOONEY MODEL M20C (1965)  
ACTUAL WEIGHT & BALANCE DATA

F.A.A. Registration No. \_\_\_\_\_  
Serial No. \_\_\_\_\_

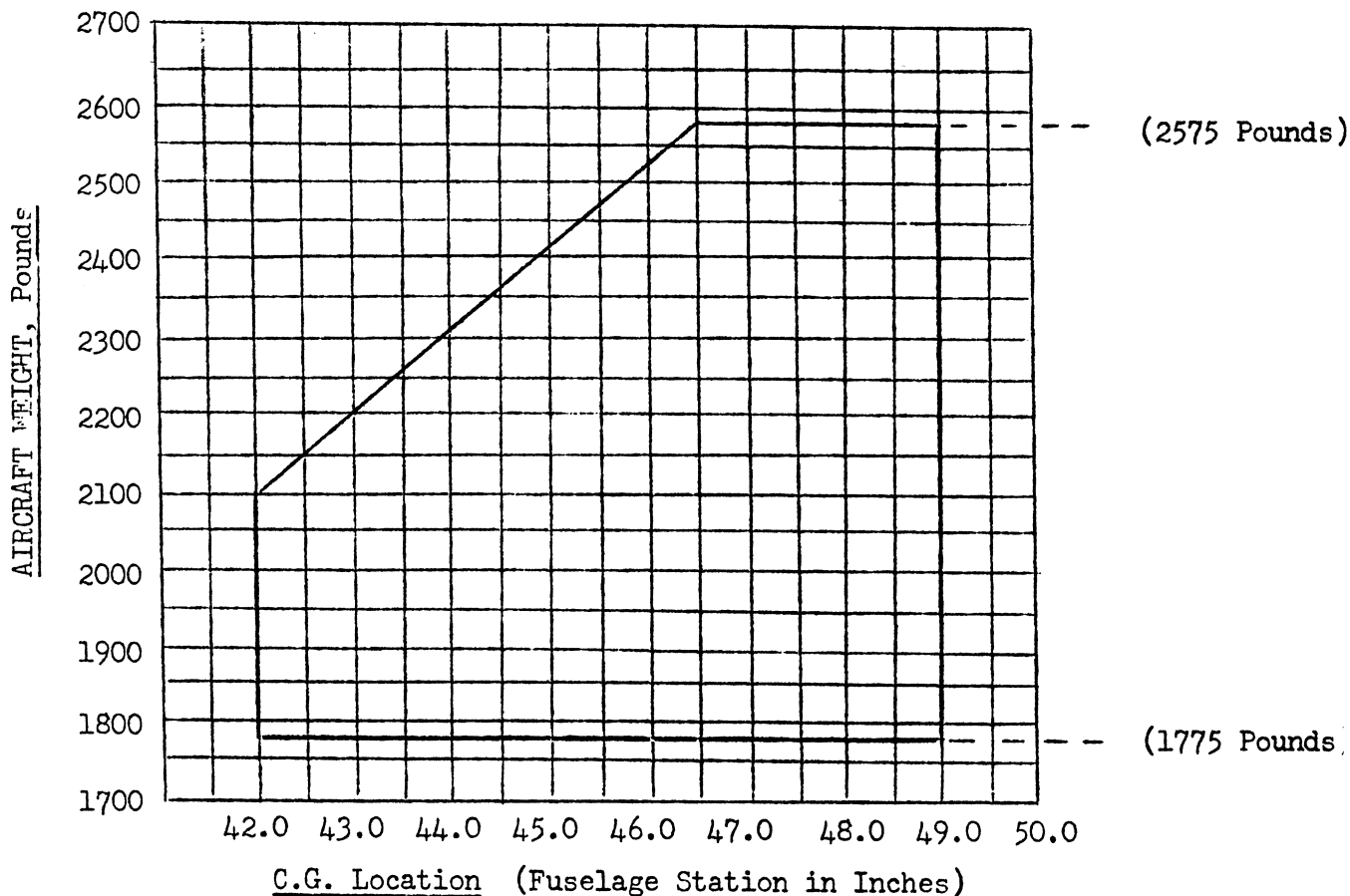
Date \_\_\_\_\_

1. WEIGHT AND CENTER OF GRAVITY LIMITS:

Maximum certificated aircraft weight for all operating conditions is 2575 pounds.

It is the responsibility of the airplane owner and of the pilot to insure that the aircraft is properly loaded. The empty weight, empty weight C.G., and useful load are noted below for this airplane as delivered from the factory. If the airplane or equipment have been altered, refer to the latest Approved Repair & Alteration Form (FAA-337) for this information.

The figure shown below is a plot of aircraft weight versus center of gravity (C.G.). The fore and aft location of the C.G. is plotted in terms of distance from the Horizontal Datum, which is the Centerline of the Nose Gear Support Bolts (Fuselage Sta. 0). The aircraft must be operated strictly within the limits of the envelope defined by the dark lines on this figure. The loading envelope is based on the gear extended configuration.



The points marked 'A', 'B', and 'C' on the above figure are the plotted results of the sample Weight and Balance calculations shown on Page 2. The pilot should make a similar check of his specific loading as part of his Pre-Flight Check.

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2. USEFUL LOAD:

Maximum Useful Load is 2575 - \_\_\_\_\_ = \_\_\_\_\_ lbs.

Useful load items are:

<u>Item</u>	<u>Weight</u>	<u>Arm</u>
Oil, 2 Gallons	15	-7.4
Pilots, (2) each	170	36.5 to 44.0
Fuel, 52 Gallons maximum	312	48.4
Rear Passengers, (2) each	170	70.7
Baggage maximum	120	93.0
Hatrack maximum	10	114.0

The Empty Weight C.G. location is with the landing gear extended and with both front seats in the forward position (40.0"). Each seat weighs 17 pounds. Maximum seat travel is 7.5" in 6 equal adjustments. Therefore, seat positions are 1.25" apart.

3. SAMPLE WEIGHT & BALANCE COMPUTATIONS, GEAR EXTENDED:

A. Most Forward at any Weight

<u>Item</u>	<u>Weight</u>	<u>Arm</u>	<u>Moment</u>
Weight Empty			
Oil (2 Gals.)	15	-7.4	-111
Front Seats Moved Aft _____ " Each (Compute Moment Only, Empty Wt. Includes Seats)	--		
Pilot (_____ Position of Seat)	170		
Front Passenger (_____ Position of Seat)	170		
Fuel (15.0 Gals. Minimum in Tanks)	90	48.4	4356
Weight & C.G.			

B. Most Forward Loading with Full Tanks

Weight Empty			
Oil (2 Gals.)	15	-7.4	-111
Front Seats Moved Aft _____ " Each (Compute Moment Only, Empty Wt. Includes Seats)	--		
Pilot (_____ Position of Seat)	170		
Front Passenger (_____ Position of Seat)	170		
Fuel (52 Gals. Maximum in Tanks)	312	48.4	15,101
Weight & C.G.			

C. Most Rearward Loading at Gross Weight

Weight Empty			
Oil (2 Gals.)	15	-7.4	-111
Front Seats Moved Aft _____ " Each (Compute Moment Only, Empty Wt. Includes Seats)	--		
Pilot (_____ Position of Seat)	170		
Front Passenger (_____ Position of Seat)	170		
Fuel (_____ Maximum)		48.4	
Rear Passengers (2)	340	70.7	24,038
Baggage (Maximum)		93.0	
Weight & C.G.			

The above loadings are presented as examples only. Loadings other than the above must be substantiated by additional calculations. Two persons in the rear seat with only one pilot is not normally an acceptable loading.

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4. EQUIPMENT LIST:

The following equipment was installed in this airplane as delivered from the factory and is included in the Empty Weight:

Check Items Installed

<u>No.</u>		<u>Wt.</u>	<u>Arm</u> <u>Arm</u>
4.	Hartzell Constant Speed Propeller		
( )	(a) Hartzell HC-C2YK Hub with 1/7666-2 Blades	53.75	(-30.16)
( )	(b) Hartzell Spinner Assembly 835-20	3.25	(-29.18)
( )	(c) Hartzell Governor H-1	4.5	(+ 3.6)
101.	Fuel Pumps		
(x)	(a) One Engine-Driven Pump, AC Part No. 6440152	1.5	(+ 1.2)
(x)	(b) One Electric Pump, Dukes Part No. 4140-00-21A	1.9	(- 1.5)
(x) 102.	Oil Radiator		
	(b) Harrison 8526250	2.0	(-18.0)
(x) 103.	Carburetor Air Filter, Air-Maze 13219	1.0	(-17.0)
(x) 104.	Starter		
	(c) Delco-Remy 1109519	17.8	(-18.0)
(x) 201.	Two Main Wheel-Brake Assemblies, 6.00-6		
	(c) Cleveland Model DHB-3	19.1	( 64.5)
	Wheel Assembly No. 40-24		
	Brake Assembly No. 30-5		
(x) 202.	(a) Two Main Wheel 6-Ply Rating Tires, 6.00-6	17.0	(+64.5)
	Type III, with Regular Tubes		
(x) 205.	One Nose Wheel, 5.00-5, Type III		
	(b) Cleveland Model 40-33	4	(- 2.0)
(x) 206.	(a) One Nose Wheel 4-Ply Rating Tire, 5.00-5	7	(- 2.0)
	Type III, with Regular Tube		
(x) 301.	Electric Generator		
	(c) 50 AMP, Delco-Remy 1101915	16.6	(-19.5)
(x) 302.	(c) Prestolite R-35 Battery	28.0	(+ 2.5)
(x) 303.	Voltage Regulator		
	(c) 50 AMP, Delco-Remy 1119224C	2.0	(+ 7.0)
(x) 601.	Stall Warning Indicator, Safe-Flight Model 164R	1.0	(+28.0)
602.	Vacuum System		
(x)	(a) In Accordance with Mooney Dwg. 610012 (8614)	6.0	(+ 2.0)
603.	Instruments		
(x)	(a) Horizon Gyro	4.5	(+19.0)
(x)	(b) Directional Gyro	4.0	(+20.0)
(x)	(c) Clock	.4	(+30.5)
(x)	(d) Outside Air Temperature Gauge	.2	(+33.0)
(x)	(e) Rate of Climb Indicator	1.0	(+22.3)
(x)	(f) Electric Turn & Bank Indicator	1.25	(+21.50)

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4. EQUIPMENT LIST (Con't)

No.		Wt.	Arm
(x) 604.	Cigarette Lighter	.2	(+21.0)
( ) 605.	Rotating Beacon, Grimes, In Accordance With Mooney Dwg. 950018 (8234)	2.0	(+163.0)
( ) 606.	Dual Controls	3.5	(+14.0)
( ) 607.	_____	_____	_____
( ) 608.	_____	_____	_____
( ) 609.	_____	_____	_____
( ) 610.	_____	_____	_____
( ) 611.	_____	_____	_____
( ) 612.	_____	_____	_____
( ) 613.	_____	_____	_____

5. EMPTY WEIGHT AFTER INSTALLATION OF OPTIONAL EQUIPMENT:

<u>Item</u>	<u>Weight</u>	<u>Arm</u>	<u>Moment</u>
<u>Weight Empty as Weighed, Gear Extended</u>	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
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_____	_____	_____	_____
_____	_____	_____	_____

Computed Empty Weight & C.G., Gear Extended \_\_\_\_\_

\*Added after Production Weight & Balance  
\*\*Rebuilt Instruments  
\*\*\*Removed after Production Weight & Balance

Meoney Aircraft, Inc.

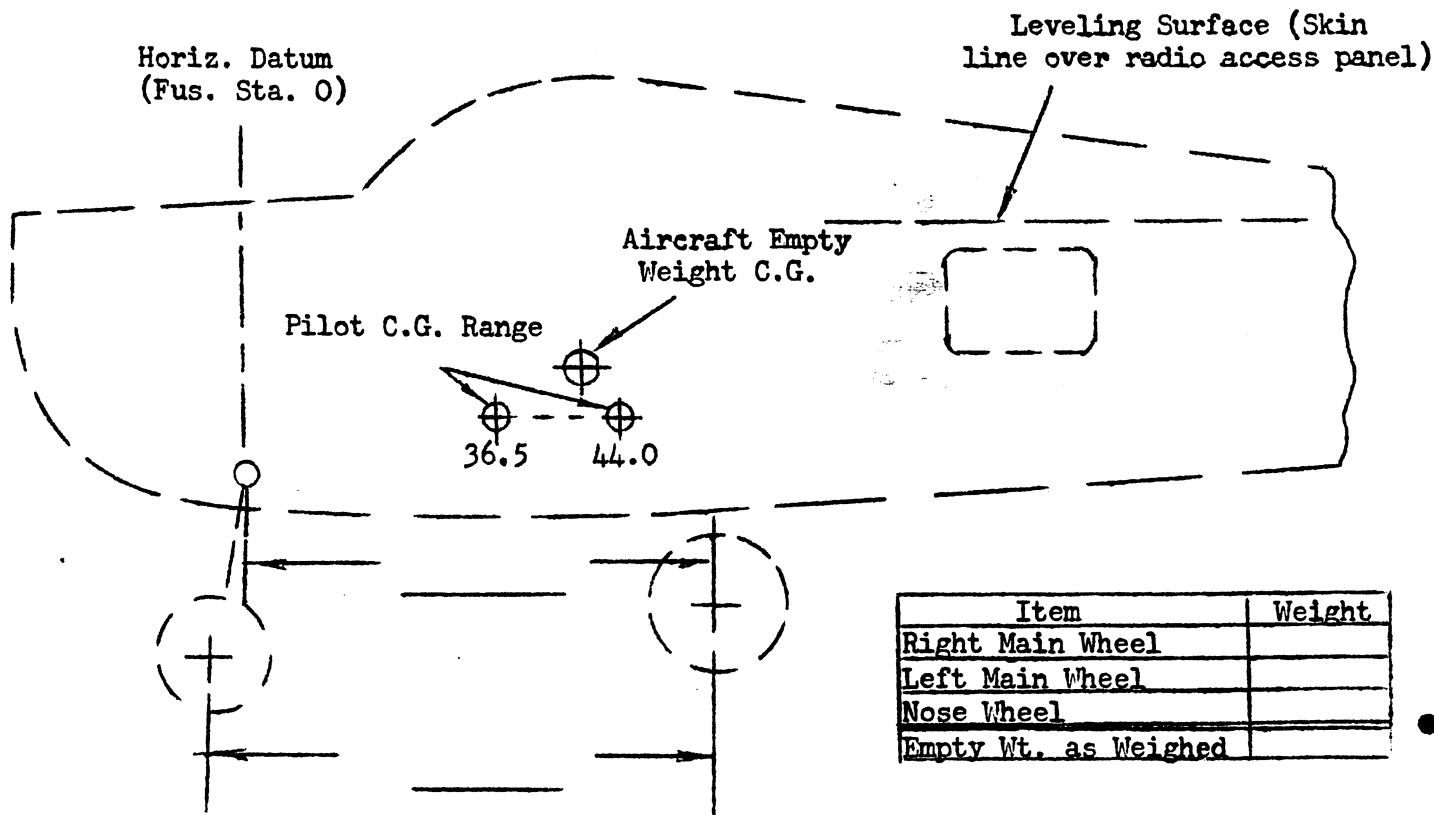
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6. EMPTY WEIGHT & C.G. COMPUTATIONS:



Item	Weight
Right Main Wheel	
Left Main Wheel	
Nose Wheel	
Empty Wt. as Weighed	

Horizontal Datum is Centerline of Nose Gear Support Bolts (Sta. 0) and is 33.0" forward of Wing L.E. at Wing Sta. 59.25 (Inboard edge of stall strip). MAC is 59.2". L.E. of MAC is 33.1" aft Datum. Leveling means: Edge of skin splice over aft fuselage radio access panel. (Spirit level is used to level.)

Computations:

C.G. Forward of Main Wheels = \_\_\_\_\_ x \_\_\_\_\_ / \_\_\_\_\_ = \_\_\_\_\_";

C.G. Aft Datum = \_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_";

C.G. % MAC = ( \_\_\_\_\_ - 33.1) / 59.2 = \_\_\_\_\_ / 59.2 = \_\_\_\_\_ % MAC

The Empty Weight C.G. location is with the landing gear extended and with both front seats in the forward location (40.0"). Each seat weighs 17.0 pounds. Maximum seat travel is 7.5" in 6 equal adjustments. Moment change per seat in aft position (47.5") is 128 inch-pounds.

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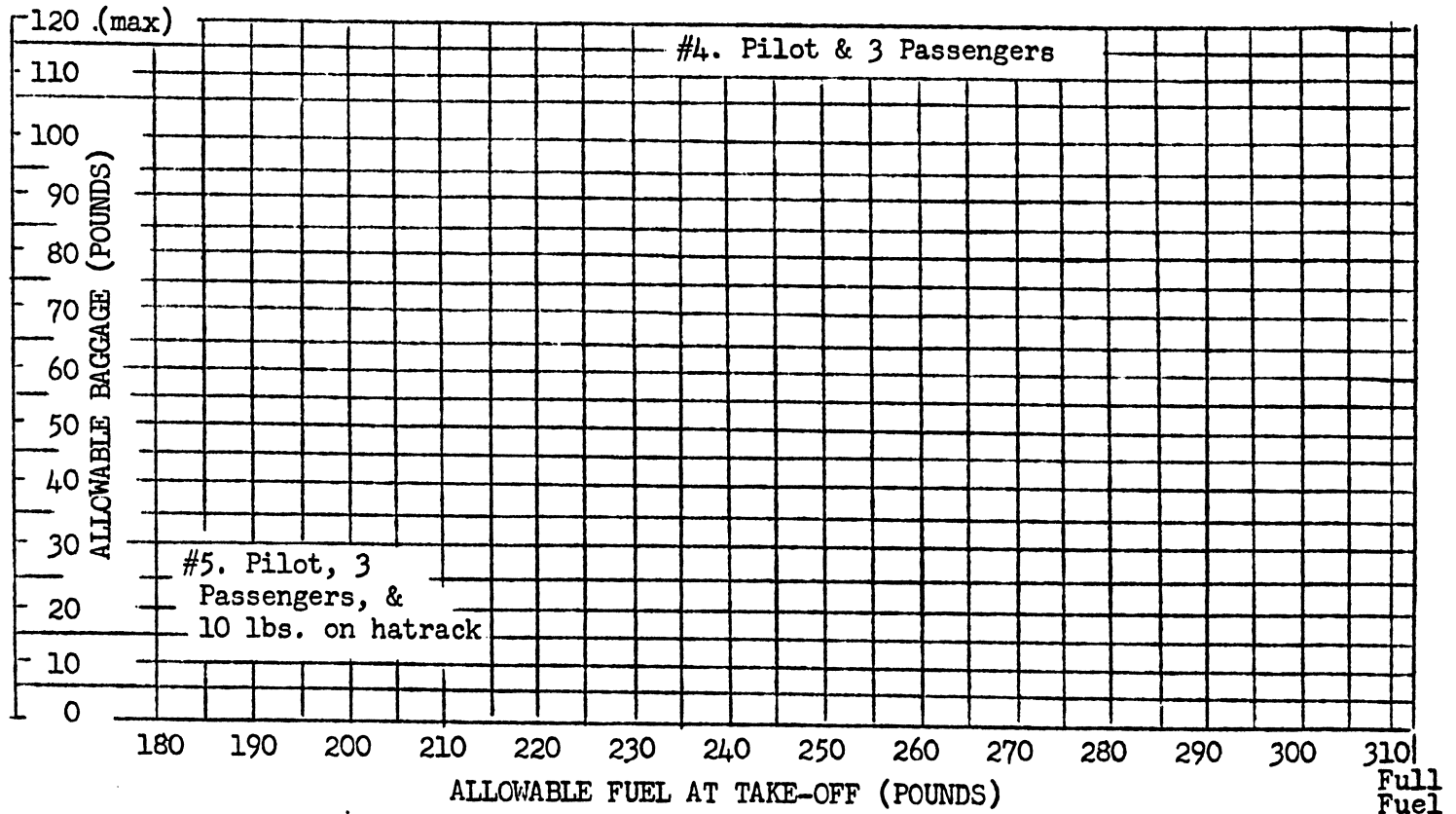
7. LOADING SCHEDULE:

The following information is offered as an aid in checking loadings without having to perform the computations shown on Page 2. These loadings are all based on an average passenger or pilot weight of 170 pounds and it is assumed that the forward seats are in the second position aft. If the actual loading does not correspond to one of the basic loading conditions, then a detailed check should be made according to the procedure shown on Page 2.

For normal usage, there are five basic loadings for this airplane. They are:

- Loading #1 Pilot alone
- Loading #2 Pilot and front passenger
- Loading #3 Pilot, front passenger and one rear passenger
- Loading #4 Pilot and 3 passengers
- Loading #5 Pilot, 3 passengers and 10 lbs. in hatrack

Loadings #1 and #2 are not limited in any way. The maximum fuel, baggage, and hatrack loads can be carried without exceeding either gross weight or C.G. limits. Loading #3 is not limited as far as C.G. is concerned. However, it is possible to exceed the gross weight if the empty, equipped weight of the airplane exceeds 1608 pounds. Loadings #4 and #5 are limited as shown in the graph below.



Loading #4: take-off fuel with \_\_\_ # baggage = 1880 - \_\_\_ - empty wt. = \_\_\_ lbs. (Max.)  
 . fuel with no baggage = 1880 - empty wt. = \_\_\_ lbs. (Max.)

Loading #5: take-off fuel with \_\_\_ # baggage\* = 1870 - \_\_\_ - empty wt. = \_\_\_ lbs. (Max.)  
 fuel with no baggage = 1870 - empty weight = \_\_\_ lbs. (Max.)

\*Note: Max. baggage for Loading #5 is 15 lbs. less than max. baggage for Loading #4.

MOONEY CORPORATION  
Engineering Flight Test

WEIGHT AND BALANCE

MODEL \_\_\_\_\_ SERIAL NUMBER \_\_\_\_\_ DATE \_\_\_\_\_

LOADED AS FOLLOWS

\_\_\_\_\_

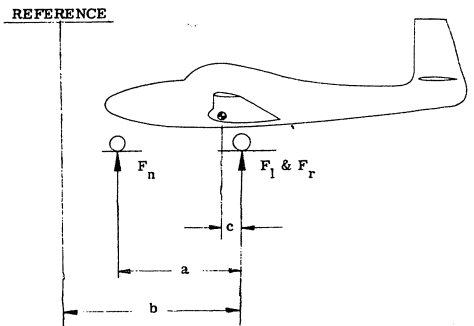
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



(F<sub>r</sub>) Weight - Right Main Wheel = \_\_\_\_\_ lbs.

(F<sub>l</sub>) Weight - Left Main Wheel = \_\_\_\_\_ lbs.

(F<sub>n</sub>) Weight - Nose Wheel = \_\_\_\_\_ lbs.

(F<sub>t</sub>) Total Weight of Aircraft =   LBS

(a) Distance - Nose Wheel C to Main Wheel C = \_\_\_\_\_ inches

(b) Distance - Reference to Main Wheel C = \_\_\_\_\_ inches

(c) C.G. Location =  $\frac{(F_n)(a)}{(F_t)}$  =  $\frac{( \quad ) ( \quad )}{( \quad )}$   
 = \_\_\_\_\_ inches from main wheels

(d) Fuselage Station of Reference = \_\_\_\_\_ inches

Fuselage Station of C.G. = (b) - (c) + (d) = \_\_\_\_\_ inches

=   % MAC