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INTRODUCTION

The FAA charges you, the aircraft owner or pilot, with the responsibility of properly loading your aircraft for safe flight. Data presented in this document will enable you to carry out this responsibility and insure that your airplane is loaded to operate within the prescribed weight and center-of-gravity limitations.

FAA regulations also require that any change in the original equipment affecting the empty weight center of gravity be recorded in the Aircraft Log Book. A form for maintaining a permanent record of all such changes is provided on page 3–1. This form, if properly maintained, will enable you to determine the current weight-and-balance status of the airplane for load scheduling. The weight-and-balance data entered as your aircraft left the factory, plus the record you maintain on page 3–1, is all of the data needed to compute loading schedules.

The maximum certificated gross weight for the Mooney STATESMAN under all operating conditions is 2525 pounds. Maximum useful load is determined by subtracting the corrected aircraft empty weight from its maximum gross weight. The STATESMAN must be operated strictly within the limits of the Center-of-Gravity Moment Envelope shown on page 2–3.
# SECTION I. EQUIPMENT LIST AND CORRECTED EMPTY WEIGHT DATA

## EQUIPMENT CHECKLIST

The equipment checked below was factory installed and is included in the original or basic empty weight of the aircraft.

**FAA Registration No.**

**M20G Serial No.**

<table>
<thead>
<tr>
<th>FED. A/C SPEC. 2A3 ITEM NO.</th>
<th>ITEM DESCRIPTION</th>
<th>WEIGHT</th>
<th>ARM</th>
<th>MARK ITEMS INSTALLED</th>
</tr>
</thead>
<tbody>
<tr>
<td>04</td>
<td>Constant-Speed Propeller, Hartzell</td>
<td>53.75</td>
<td>-35.16</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Hub (HC-C2YK-1) with (7666-2) Blades</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hartzell Spinner (835-20)</td>
<td>3.25</td>
<td>-34.18</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Garwin Governor</td>
<td>2.75</td>
<td>-1.40</td>
<td>x</td>
</tr>
<tr>
<td>101</td>
<td>Fuel Pumps:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Engine Driven, AC</td>
<td>1.50</td>
<td>+1.20</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Electric, Dukes</td>
<td>1.91</td>
<td>-6.50</td>
<td>x</td>
</tr>
<tr>
<td>102</td>
<td>Oil Radiator, Stewart War.</td>
<td>2.80</td>
<td>-18.00</td>
<td>x</td>
</tr>
<tr>
<td>103</td>
<td>Induction Air Filter, Air Maze</td>
<td>1.00</td>
<td>-17.00</td>
<td>x</td>
</tr>
<tr>
<td>104</td>
<td>Starter, Prestolite</td>
<td>17.80</td>
<td>-18.00</td>
<td>x</td>
</tr>
<tr>
<td>201</td>
<td>Main Wheel &amp; Brake Assys</td>
<td>15.40</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>202</td>
<td>Main Wheel Tires (6.00 x 6)</td>
<td>17.00</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>205</td>
<td>Nose Wheel (5.00 x 5)</td>
<td>2.60</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>206</td>
<td>Nose Wheel Tire &amp; Tube</td>
<td>7.00</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>301</td>
<td>Alternator, 60 AMP</td>
<td>10.30</td>
<td>-24.50</td>
<td>x</td>
</tr>
<tr>
<td>302</td>
<td>Battery, 35 AMP HR</td>
<td>28.10</td>
<td>+2.50</td>
<td>x</td>
</tr>
<tr>
<td>303</td>
<td>Voltage Regulator, Oeco</td>
<td>1.44</td>
<td>+7.00</td>
<td>x</td>
</tr>
<tr>
<td>601</td>
<td>Stall Warning Indicator</td>
<td>0.07</td>
<td>+50.00</td>
<td>x</td>
</tr>
<tr>
<td>602</td>
<td>Gear Warning Indicator</td>
<td>0.12</td>
<td>+50.00</td>
<td>x</td>
</tr>
<tr>
<td>603</td>
<td>Instruments:</td>
<td>6.35</td>
<td>-7.35</td>
<td>x</td>
</tr>
<tr>
<td></td>
<td>Horizon Gyro</td>
<td>1.80</td>
<td>+14.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Directional Gyro</td>
<td>2.00</td>
<td>+15.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clock</td>
<td>0.40</td>
<td>+25.50</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gage OAT</td>
<td>0.20</td>
<td>+28.00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indicator, Rate-of-Climb</td>
<td>1.00</td>
<td>+22.30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turn Coordinator</td>
<td>2.90</td>
<td>+21.50</td>
<td>x</td>
</tr>
<tr>
<td>604</td>
<td>Cigarette Lighter</td>
<td>0.20</td>
<td>+21.00</td>
<td>x</td>
</tr>
</tbody>
</table>
EQUIPMENT CHECKLIST (Continued)

FAA Registration No. 
M20G Serial No. 

<table>
<thead>
<tr>
<th>EQUIP. ITEM NO.</th>
<th>ITEM DESCRIPTION</th>
<th>WEIGHT</th>
<th>ARM</th>
<th>MARK ITEMS INSTALLED</th>
</tr>
</thead>
<tbody>
<tr>
<td>605</td>
<td>Anticollision Light</td>
<td>1.88</td>
<td>+163.00</td>
<td>x</td>
</tr>
<tr>
<td>606</td>
<td>Controls, Dual</td>
<td>3.50</td>
<td>+14.00</td>
<td></td>
</tr>
<tr>
<td>607</td>
<td>P.C. System, Brittain</td>
<td>7.10</td>
<td>+46.80</td>
<td>x</td>
</tr>
<tr>
<td>608</td>
<td>Heated Pitot</td>
<td>.70</td>
<td>+38.00</td>
<td></td>
</tr>
<tr>
<td>609</td>
<td>Exhaust Gas Temp. Ind.</td>
<td>1.10</td>
<td>+17.71</td>
<td></td>
</tr>
<tr>
<td>610</td>
<td>Fuel, Full</td>
<td></td>
<td>+48.43</td>
<td></td>
</tr>
<tr>
<td>611</td>
<td>Oil (2 GAL)</td>
<td>15.00</td>
<td>-7.40</td>
<td></td>
</tr>
</tbody>
</table>

DATE INSPECTED

MO
DAY
YR.
EQUIPMENT INSTALLED OR REMOVED AFTER BASIC WEIGHT & BALANCE

The equipment listed below was factory installed or removed after basic weight and balance of the aircraft.

FAA Registration No. ________________
M20G Serial No. ________________

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>ITEM DESCRIPTION</th>
<th>WEIGHT</th>
<th>ARM</th>
<th>MOMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Oil (2 GAL)</td>
<td>-15.00</td>
<td>-12.40</td>
<td>+186.00</td>
</tr>
<tr>
<td>2</td>
<td>Fuel (Full)</td>
<td></td>
<td>48.43</td>
<td></td>
</tr>
</tbody>
</table>

Weight and Moment Added or Subtracted

CORRECTED EMPTY WEIGHT AS DELIVERED

<table>
<thead>
<tr>
<th>Aircraft Empty Weight as Weighed</th>
<th>WEIGHT</th>
<th>ARM</th>
<th>MOMENT</th>
</tr>
</thead>
</table>

Weight Added or Subtracted

Corrected Empty Weight and CG (Gear Extended) as Delivered From Factory

Transfer these figures to page 3-1.
SECTION II. PILOTS LOADING GUIDE

LOADING CALCULATION PROCEDURE

Proper loading of the aircraft is essential for maximum flight performance and safety. This section will assist you in determining whether the aircraft loading schedule is within the approved weight and center-of-gravity limits.

To figure an actual loading problem for your STATESMAN proceed as follows:

Step 1. Refer to the latest entry on page 3–1 for the current empty weight and moment.

NOTE: Since the engine oil is normally kept at the full level, use the oil weight and moment figures shown in the sample problems as constants in calculating all loading problems.

Step 2. Note the pilot's weight and the position his seat will occupy in flight. Find this weight on the left scale of the Loading Computation Graph (page 2–3) and cross the graph horizontally to the point representing the pilot's seat position between the FWD and AFT position lines on the graph for #1 and #2 seats. When this point is located, drop down to the bottom scale to find the value of the moment/1000 due to the pilot's weight and seat position.

Repeat the procedure for the copilot and enter these weights and moment/1000 values in the proper subcolumns in the Problem Form on page 2–2.

Step 3. Proceed as in Step 2 to account for the passengers in seats 3 and 4. Enter the weight and value of moment/1000 in the proper columns.

Step 4. Again proceed as in Step 2 to account for the amount of fuel carried, and enter the weight and moment/1000 values in the proper columns.

Step 5. Once more proceed as in Step 2 to account for the baggage to be carried and enter the figures in the proper columns.

Step 6. Total the weight columns. This total must be 2525 pounds or less. Total the Moment/1000 column. Do not forget to subtract negative numbers.

Step 7. Refer to the Center-of-Gravity Moment Envelope (page 2–3). Locate the loaded weight of your airplane on the left scale of the graph and trace a line horizontally to the right. Locate the total moment/1000 value for your airplane on the bottom scale of the graph and trace a line vertically above this point until the horizontal line for weight is intersected. If the point of intersection is within the shaded area, your aircraft loading is acceptable. If the point of intersection falls outside the shaded area, you must rearrange the load before takeoff.
<table>
<thead>
<tr>
<th>STEP</th>
<th>ITEM</th>
<th>WEIGHT (POUNDS)</th>
<th>MOMENT 1000</th>
<th>WEIGHT (POUNDS)</th>
<th>MOMENT 1000</th>
<th>WEIGHT (POUNDS)</th>
<th>MOMENT 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Current Aircraft Empty Weight (From Page 3-1)</td>
<td>1593.0</td>
<td>70.14</td>
<td>1593.0</td>
<td>70.14</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Oil--8 QT @ 1.875 LBS/QT (Sump assumed full for all flights)</td>
<td>15.0</td>
<td>-0.19</td>
<td>15.0</td>
<td>-0.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pilot Seat (#1)*</td>
<td>170.0</td>
<td>5.35</td>
<td>170.0</td>
<td>6.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Co-pilot Seat (#2)*</td>
<td>170.0</td>
<td>5.35</td>
<td>170.0</td>
<td>6.63</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Left Rear Seat (#3)*</td>
<td>170.0</td>
<td>13.09</td>
<td>--</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Right Rear Seat (#4)*</td>
<td>170.0</td>
<td>13.09</td>
<td>--</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Fuel (No. GAL x 6 LBS GAL) (MAX 52 GAL 312 LBS)</td>
<td>210.0</td>
<td>10.17</td>
<td>312.0</td>
<td>15.11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Baggage (MAX 120 LBS)</td>
<td>27.0</td>
<td>2.58</td>
<td>120.0</td>
<td>11.46</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hat Rack (MAX 10 LBS)</td>
<td></td>
<td></td>
<td>10.0</td>
<td>1.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Loaded Aircraft Weight</td>
<td>2525.0</td>
<td></td>
<td>2270.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total Moment/1000</td>
<td></td>
<td>119.58</td>
<td></td>
<td>110.97</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Obtain the moment/1000 value for each position (FWD, MID, or AFT) from page 2-3.

Refer to page 2–3, Center-of-Gravity Moment Envelope, to determine whether your aircraft loading is acceptable. (The hat rack arm station is 119.0; the fuel arm station is 49.43; and the oil arm station is -12.4)
WEIGHT & BALANCE RECORD
MOONEY STATESMAN
MODEL M20G

LOADING COMPUTATION
GRAPH

CENTER-OF-GRAVITY
MOMENT ENVELOPE

PROBLEM #1
GROSS WEIGHT 2525 LBS

PROBLEM #2

PROBLEM #1
SECTION III. OWNERS WEIGHT & BALANCE RECORD

CORRECTED EMPTY WEIGHT & MOMENT (CG)
Enter below all weight change data from the Aircraft Log Book.

FAA Registration No. _______________
M20G Serial No. _______________

<table>
<thead>
<tr>
<th>EMPTY WEIGHT</th>
<th>ARM</th>
<th>MOMENT 1000</th>
<th>USEFUL LOAD</th>
<th>DATE AND SOURCE OF INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


MOONEY CORPORATION
Engineering Flight Test

WEIGHT AND BALANCE

MODEL ________ SERIAL NUMBER ________ DATE ________

LOADED AS FOLLOWS

(F_r) Weight - Right Main Wheel = ________ lbs.
(F_l) Weight - Left Main Wheel = ________ lbs.
(F_n) Weight - Nose Wheel = ________ lbs.
(F_t) 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 = \[
\frac{(F_n)(a)}{(F_t)}
\] = ________ inches from main wheels

(d) Fuselage Station of Reference = ________ inches

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

= ________ % MAC