

## WEIGHT AND BALANCE REPORT

This must be done before a flight permit can be issued. Level the plane using a level on the bottom surface of the wing and sufficient blocking under the tailwheel. Be sure to block up the wheels depending on the scales used, to ensure that level attitude is maintained throughout the exercise. A set of digital (strain gauge type) bathroom scales can be used because these have sufficient accuracy for a meaningful report.

Three sets of scale readings at least, are necessary to establish the C.G. for each load item. First, weigh the plane empty, weigh again with the pilot in place (make sure that the plane is still level), then fill up the gas tank and weigh again for the third time. If you plan to have a baggage compartment, then fill it up and weigh the plane once more. This may seem to be overly laborious but really it's the only way to get accurate and reliable results.

The object of all this is to obtain the C.G. for these load items so that you can figure out min's and max's of the various weight combinations while staying within the C.G. envelope. Use the enclosed weight and balance forms as a guide.

The C of G forward limit is 1" forward of the vertical front of the main wing spar and the rearward limit is 2" behind the front of the spar. The C of G must fall within this 3" range for all combinations of pilot weight, gasoline on board, and baggage. The upper limit for pilot weight is about 190 lbs.

## HOW TO CALCULATE CG

To Calculate the Weight and Balance you will need the distance from the front of the main wing spar to the (3) landing gear positions. If the gear is FORWARD of the spar this is a negative number and AFT is a positive number. This is the ARM

Weight on Wheel 1 x ARM1 = Moment 1

Weight on Wheel 2 x ARM2 = Moment 2

Weight on Wheel 3 x ARM3 = Moment 3

$$\text{CG} = (\text{Moment1} + \text{Moment2} + \text{Moment3}) / \text{Total weight}$$

Using this setup the CG value must be between +1 and -2.