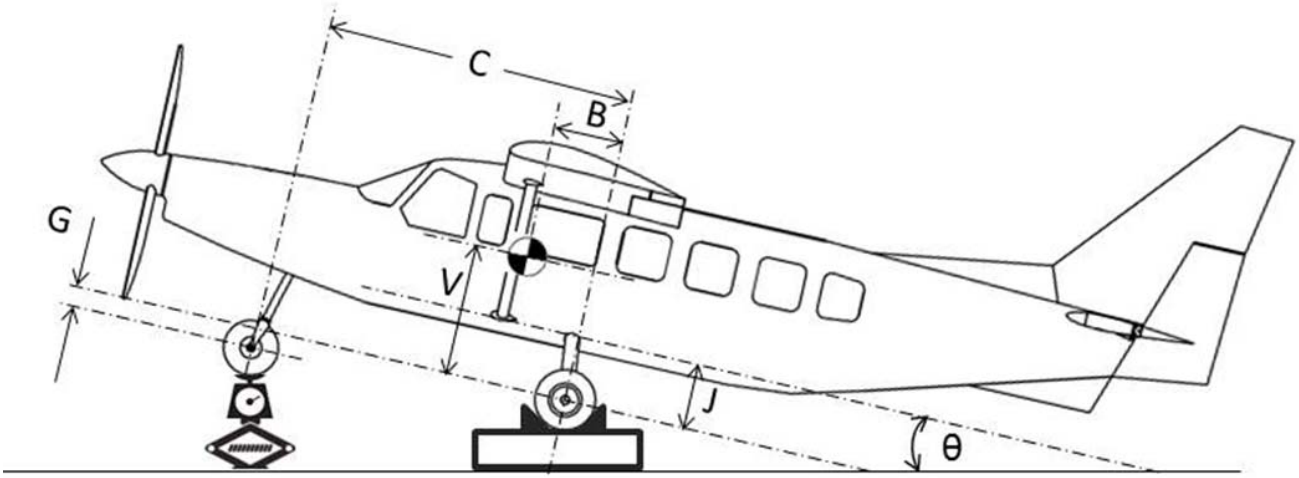
7.3 Vertical Center of Gravity Measurement

1. Drain or block landing gear struts to keep distances *G*, *J*, and *V* constant.
2. Level the fuselage and measure the weight on the nose wheel (F_o).
3. Tilt the aircraft at various (θ) measure nose wheel weight (F).



The change in nose wheel force can be written as

$$(F_O - F) = \left[V + \frac{BG}{C}\right]\left(\frac{W}{C\cot\theta + G}\right)$$

4. Plot (F_o-F) vs the term in parenthesis.
5. Slope of line equals term in brackets.
6. Solve for *V* after measuring *B*, *C*, *G,* and the slope.

- This method applies to "gear down" *cg* .
- For "gear up" add the manufacturer's prediction of the *cg* shift to this result.