

# Aircraft Center of Gravity Calculator

Aerodynamic Center (AC), Mean Aerodynamic Chord (MAC), Center of Gravity (CG), Neutral Point (NP) and Wing Area

Wing Root Chord (A):

Wing Tip Chord (B):

Wing Sweep Distance (S):

Wing Half Span (Y):

Stabiliser Root Chord (AA):

Stabiliser Tip Chord (BB):

Stabiliser Sweep Distance (SS):

Stabiliser Half Span (YY):

Distance between both LE's (D):

Stabiliser Efficiency\*:

Enter Static Margin, then  %

Mean Aerodynamic Chord MAC =

Sweep Distance at MAC (C) =

From Root Chord to MAC (d) =

From Wing Root LE to AC =

From Wing Root LE to NP =

From Wing Root LE to CG =

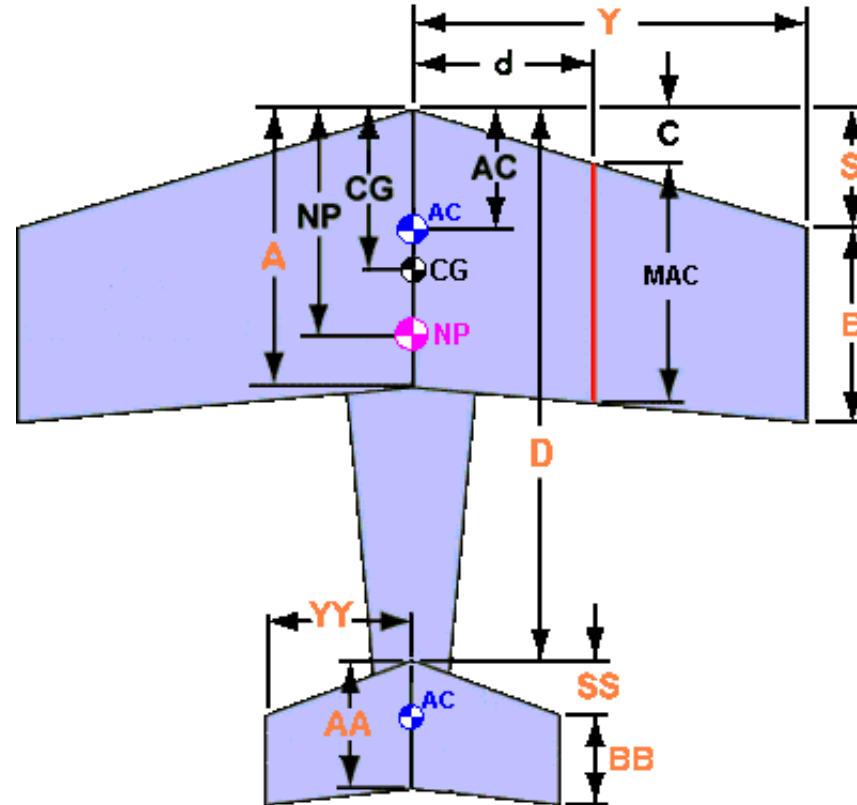
Wing Area =

Stabiliser Area =

Wing Aspect Ratio =

Tail Volume Ratio,  $V_{bar}$  =

Enter the variables at left using the same units for all entries.  
For an aircraft to be stable in pitch, its **CG** must be forward of the Neutral Point **NP** by a safety factor called the **Static Margin**, which is a percentage of the **MAC** (Mean Aerodynamic Chord).  
Static Margin should be between 5% and 15% for a good stability.



Low Static Margin gives less static stability but greater elevator authority, whereas a higher Static Margin results in greater static stability but reduces elevator authority. Too much Static Margin makes the aircraft nose-heavy, which may result in elevator stall at take-off and/or landing. Whereas a low Static Margin makes the aircraft tail-heavy and susceptible to stall at low speed, e. g. during the landing approach.

\*Choose Low Stabiliser Efficiency if the tail is close to the wing's wake or behind a fat fuselage in disturbed flow.