

Stability

How to ensure your design is dynamically stable..



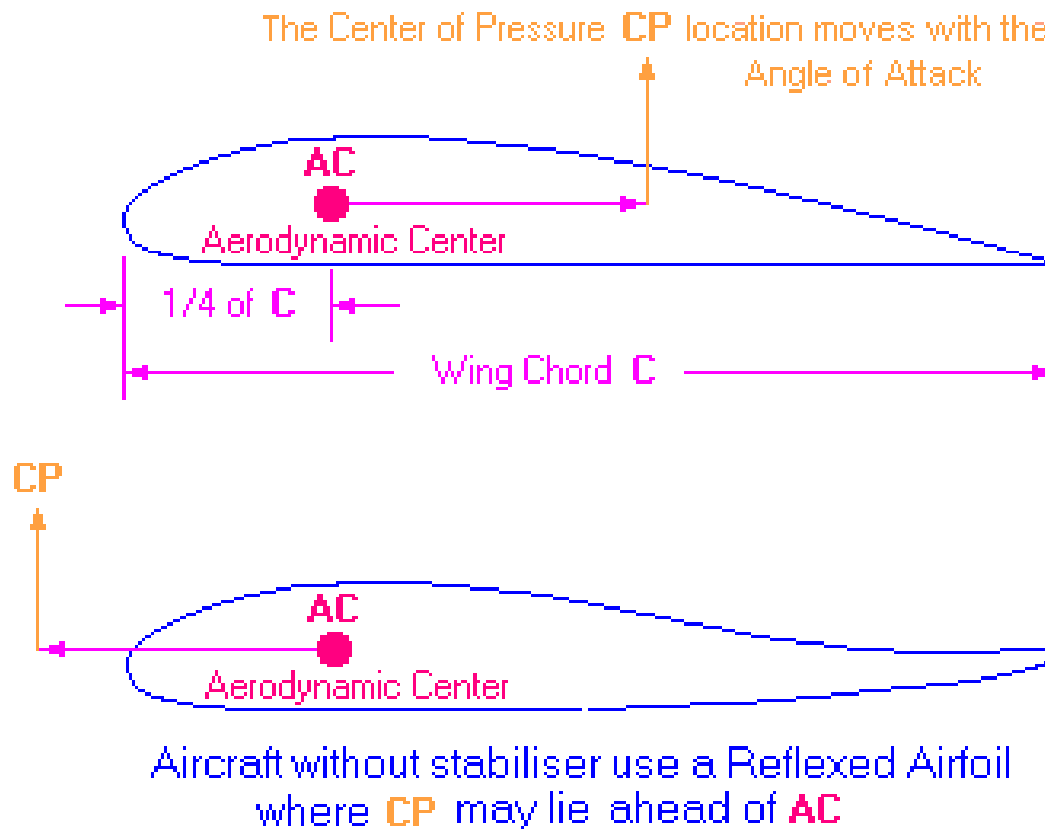
What is stability?

- The tendency to maintain the flight path irrespective of external disturbances.
- It is desirable for planes like gliders and ultra-lights.
- It is not desirable for high performance fighter aircrafts.
- It is partly desirable in passenger jets.

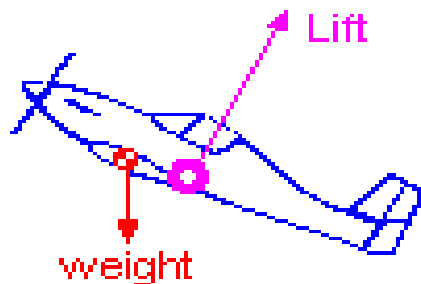


Aerodynamic centre

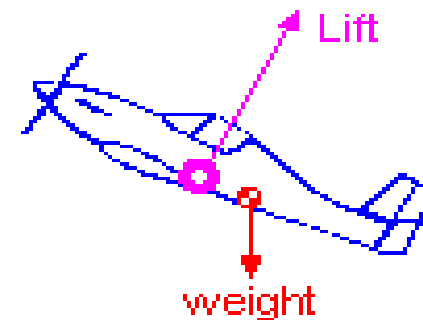
- Point through which lift acts is called A_c .



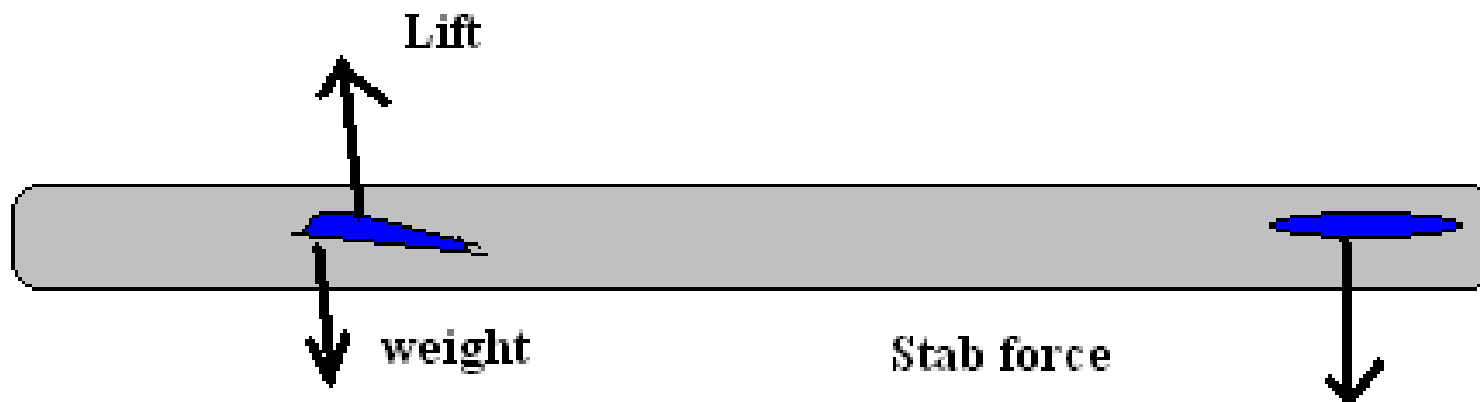
Stability in pitch



When the CG is ahead of NP the weight tends to correct the upset = Stable



When the CG is behind NP the weight worsens the upset = Unstable



Stability in roll

- Dihedral-improved stability.
- Anhedral-reduced stability.



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Stability in roll

- Wing sweep also helps in roll stability.



Yaw stability

- Provided by rudder.

