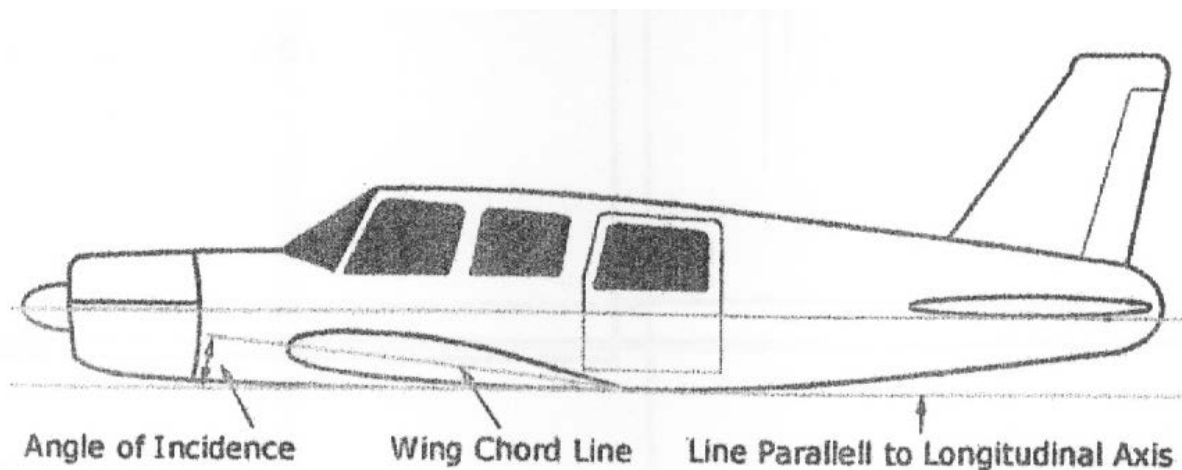


REGARDING STAB AND INCIDENCE

BY Mike Nassise

Many newcomers to the hobby may be wondering what the term incidence means and why its value needs to be determined. I admit that I often become confused when discussing related terms such as decalage, rigging angle, etc.

According to the Aviation History Online Museum "the angle of incidence is the angle formed by the wing formed by the wing chord line and the aircraft longitudinal axis. The wing chord line extends from the leading edge of the wing to the trailing edge of the wing. The longitudinal axis is an imaginary line that extends from the nose of the aircraft to the tail (see diagram below).



The angle of incidence is measured by the angle at which the wing is attached to the fuselage. On most full-size aircraft the angle of incidence is about 6 degrees and, with rare exception, cannot be varied in flight.

When the incidence of the horizontal stab is brought into the discussion, the term decalage frequently pops up. According to an article in Flying Magazine, decalage is "a French word meaning shift or offset. In aeronautical discussions, it refers to the difference between the incidences of any two lifting surfaces. It was originally applied to the two wings of a biplane. In the usual arrangement, The upper wing was further forward than the lower and had a larger angle of incidence called decalage causing the upper wing to stall first providing an auto nose down moment for recovery.

In a monoplane the term refers to the angles at which the wing and the stab are attached to the fuselage. For an airplane to be longitudinally stable, it must have a positive decalage; the forward surface must be at a greater angle of attack than the aft.