

Helix Angle.

As the propeller rotates and advances through the air (following the line of **Effective Pitch**), the actual path that the blades follow describes a **helix**. The **Helix Angle** is the angle between the **Plane of Rotation** of the propeller and the path of the **Effective Pitch**.

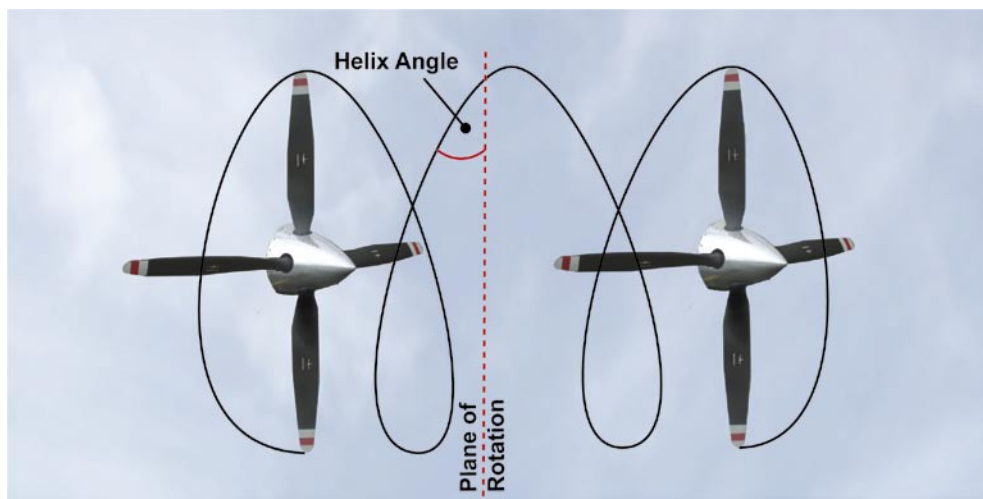
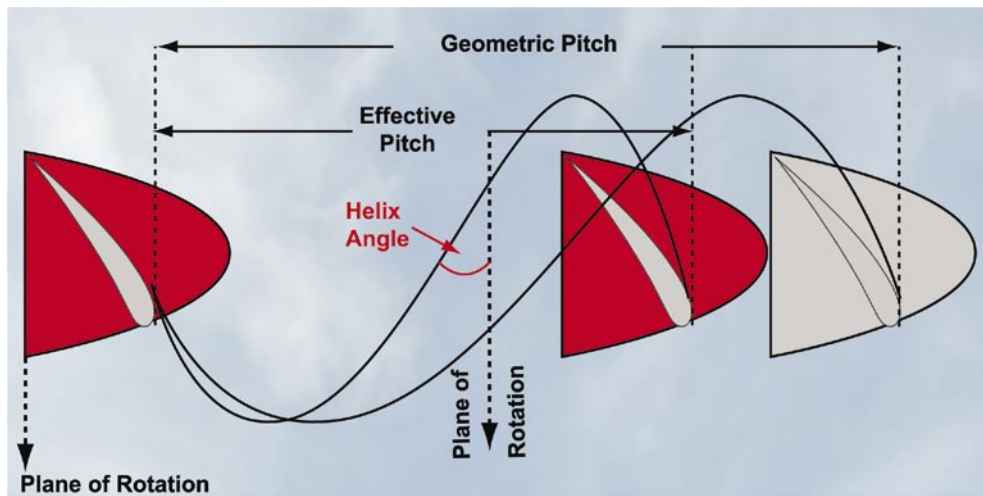


Figure 8.13 (Top) and 8.14 (Bottom) showing the helix angle.

PROPELLER THEORY.

Two Theories of Propeller Thrust?

So far, you have learnt (and, if you have stood behind a propeller-driven aircraft with its engine running, have doubtless experienced) that a **propeller accelerates a large mass of air rearwards**, thus generating **thrust** in accordance with **Newton's 2nd and 3rd Laws**. You have also read in the definitions above that propeller blades are **aerofoils** and are set at a given angle to the plane of rotation and so meet the air at an **angle of attack**. Furthermore, you will recall from an earlier chapter, in this Principles of Flight book, that aerofoils which meet the relative airflow at certain angles of attack generate an aerodynamic force called **lift** by virtue of the **pressure distribution** above and below the **aerofoil**. Rotating propeller blades, then, would seem to be able to generate **thrust** in the form of a "**horizontal lift force**" in accordance with the theories of the Swiss scientist **Bernoulli**, and as illustrated in *Figure 8.16*.