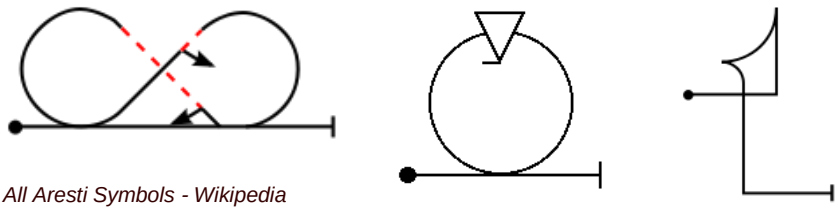
AEROBATICS

AEROBATICS: The term Aerobatics refers to the sport of performing precision maneuvers such as rolls, loops, stalls, spins, and dives with an airplane. Anyone who has read all the way through the preceding chapters deserves a little fun!

There are three basic aerobatic maneuvers; a roll, a loop and a spin, each a rotation around one of the three axes, longitudinal, lateral and vertical which are perpendicular to each other and intersect at the aircraft's center of gravity. In three dimensional space, an axis is a line around which rotation occurs. Rotation around the longitudinal axis, which is a line drawn from the nose of the aircraft to the tail, is called a bank or roll. Rotation around the lateral axis, which is a line drawn from wingtip to wingtip, is called pitch. Rotation around the vertical axis, which is a line drawn from top to bottom of the aircraft, is termed yaw. Each axis relates to the position of the aircraft regardless of its orientation to the earth.

More complicated aerobatics are combinations of the three basic maneuvers with lines (flown horizontally, vertically or angled), and gyroscopic and tumbling maneuvers using the torque provided by the engine and propeller. In this section, we will show each of the basic maneuvers and then show some of the combinations.

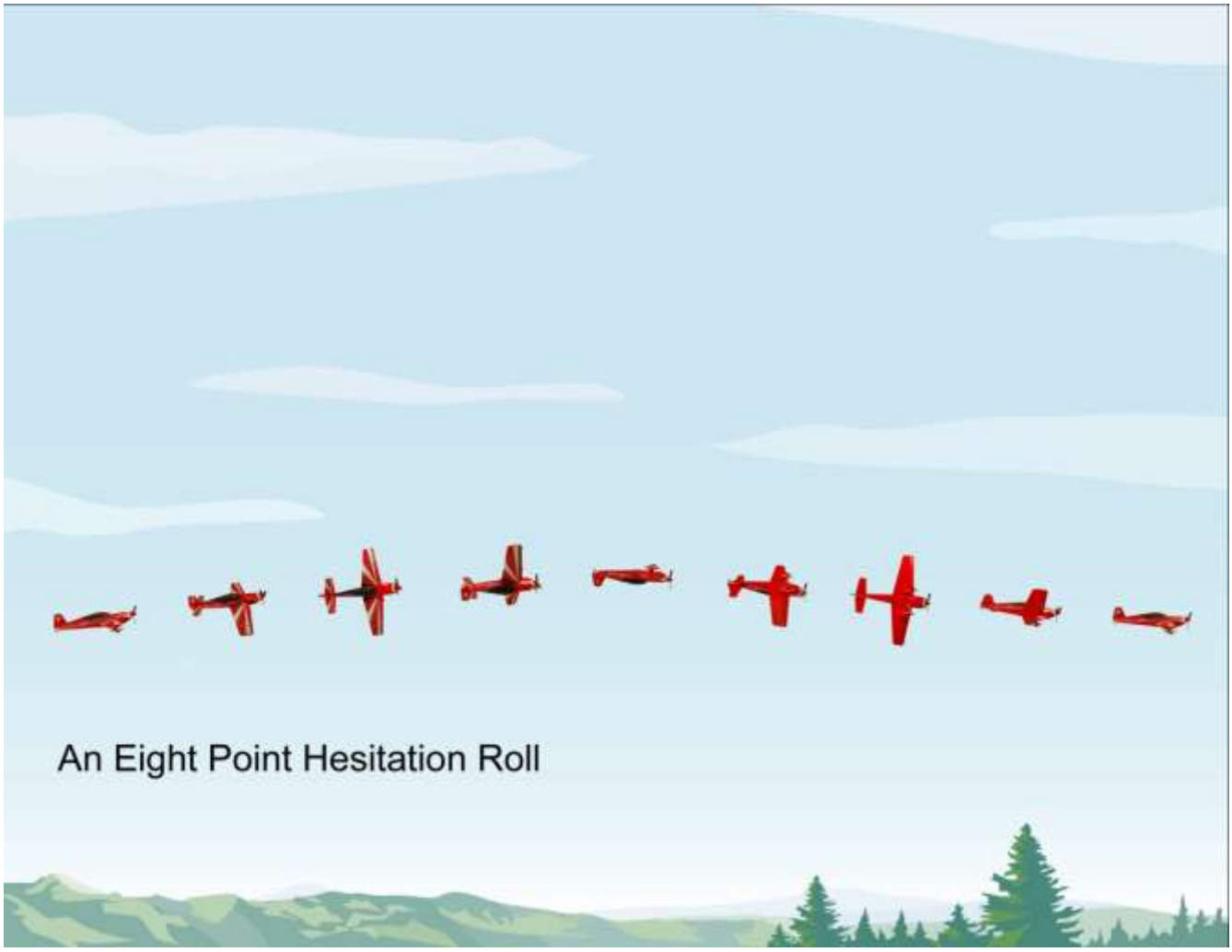
NOTATION: In aerobatics, as in dance and music, there is a system of notation or shorthand which uses symbols to describe physical movement in three dimensions. The system is known as the Aresti System, named for its creator, Spanish pilot Jose Luis Aresti. The system was developed in the early 1960's and quickly adopted by the Federation Aeronautique Interanationale (FAI) in Lausanne, Switzerland which is the non governmental international body formed in 1905 for the purpose of furthering aeronautical activity worldwide. In the US, the International Aerobatic Club (a division of the Experimental Aircraft Association, Inc. and of the National Aeronautic Association) is responsible for promoting the sport of aerobatics under the regulations of the FAI. Three typical Aresti symbols are shown below, a Cuban Eight, an Avalanche, and a Tail Slide.



All Aresti Symbols - Wikipedia

AIRCRAFT: Many different types of aircraft have been designed and certified to be used in aerobatics and they include high wing and low wing aircraft as well as biplanes. Aerobatic aircraft differ from normal aircraft in that they are designed to withstand greater stresses and often have fuel and oil systems which will function when inverted.

The **Extra 300L**, which we have used as a model in the following pages, competes in the unlimited category and is approved to plus/minus 10G's, has a roll rate of up to 400º per second and will cruise at 170 knots. It has two seats in a tandem arrangement, fixed landing gear, a constant speed propeller, and a six cylinder 300 HP engine. And, it is a great looking airplane!


An Eight Point Hesitation Roll