

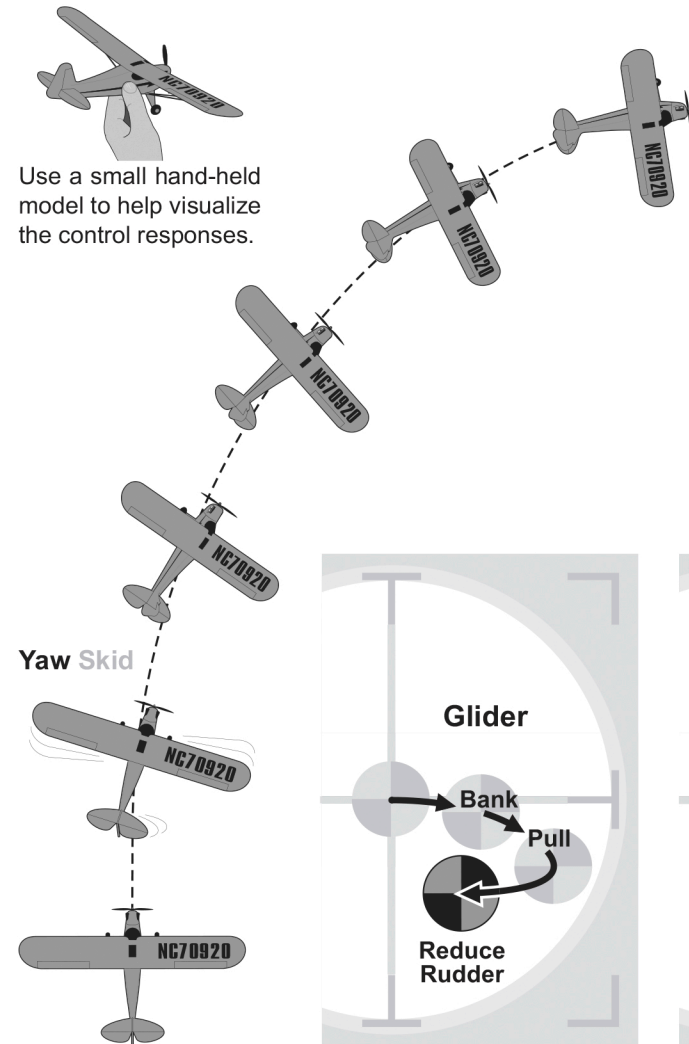
Rudder Turns

Applying rudder will yaw the nose of the airplane in the direction you want to turn. Applying rudder (yaw) also makes the wing on the outside of the turn travel faster and therefore generate more lift, causing the outside wing to rise up and bank in the direction the rudder is applied. Up elevator is used during the turn to keep the nose from dropping when the wings are banked and to keep the turn level throughout.

There are basically two different techniques used when turning with rudder, depending on the airplane. Planes that have a lot of inherent upright stability, such as a high wing powered glider, typically resist banking and therefore require you to continue holding in rudder to keep turning. Typically, a larger rudder input is needed to get the turn started, but once started, the rudder has to be reduced to keep the turn from becoming increasingly tighter, i.e., too tight!

Other planes require a technique similar to an aileron turn, where the rudder is applied only long enough to bank the wings, and then it is taken out to avoid over-banking and entering a downward spiral. The turn is then sustained and kept level by holding in up elevator.

Until you learn the characteristics of your plane, it would be safer to neutralize the rudder after a count of "1," and discover that you have to reapply it, than to realize that you have held it in too long after the plane has started diving.



Controlling the Size of Rudder Turns

The degree of bank, and therefore the size of the turn, are determined by the size of the rudder control input. A smaller rudder input produces a shallower wider turn, and vice-versa. The degree of bank also corresponds to how much up elevator will be required to keep the turn level:

During a mild bank, most of the wing's lift is still opposing the pull of gravity, and thus very little up elevator is needed to keep the turn level. During a steeper bank, there's less upward component of lift to oppose gravity, thus requiring more up elevator to keep the turn level.

Ultimately, the objective is to control the size of your turns and keep them level by paying attention to the control inputs you initiate them with, and corresponding more or less elevator depending on the size of the rudder input you apply.

Note: Rudder banks are less precise than aileron banks and tend to lag behind your control inputs if applied too quickly. In order to achieve results that more closely match your intentions, you must apply your inputs smoothly to give the plane a chance to keep up.

