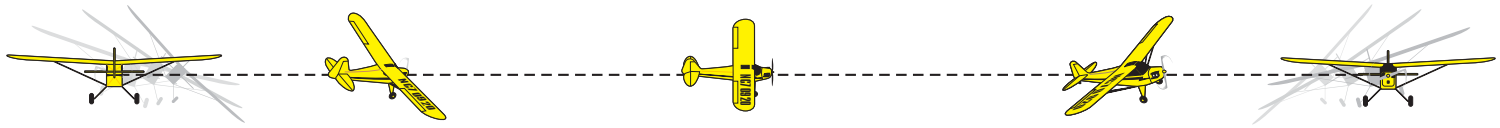
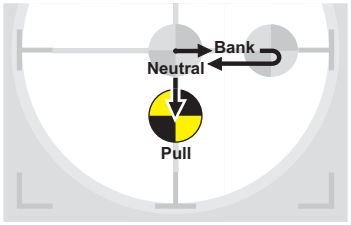
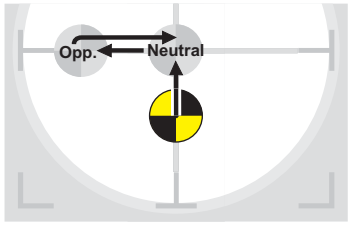
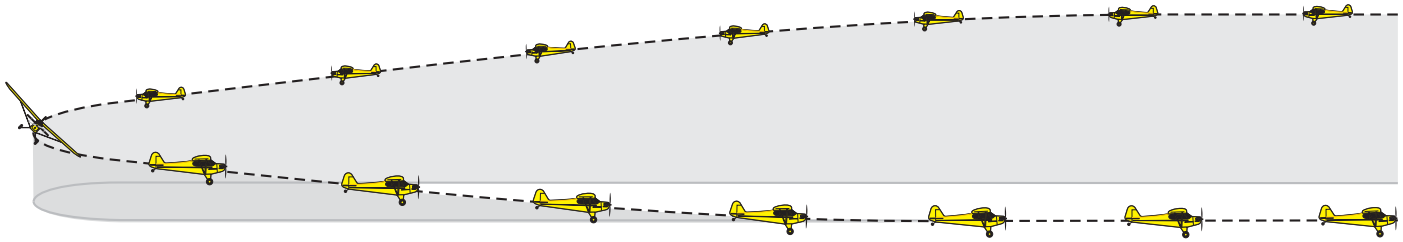




Basics of Turning, Straight Lines and Course Adjustments

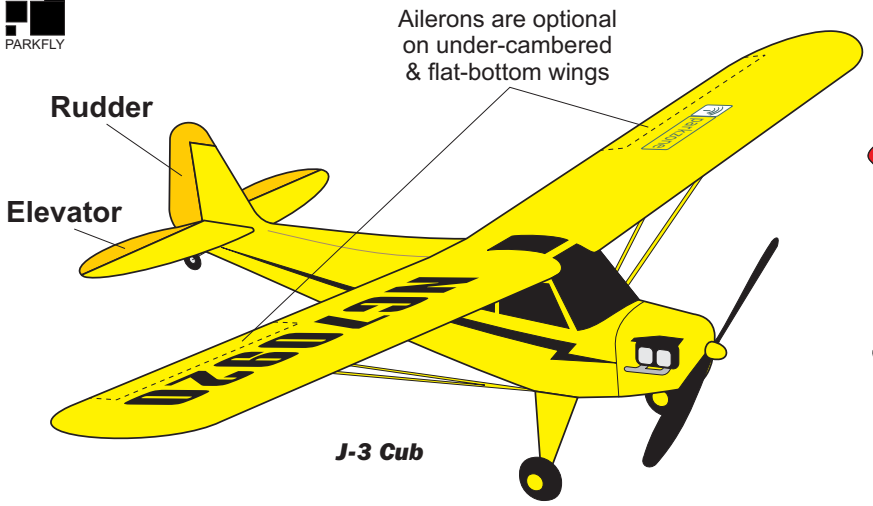


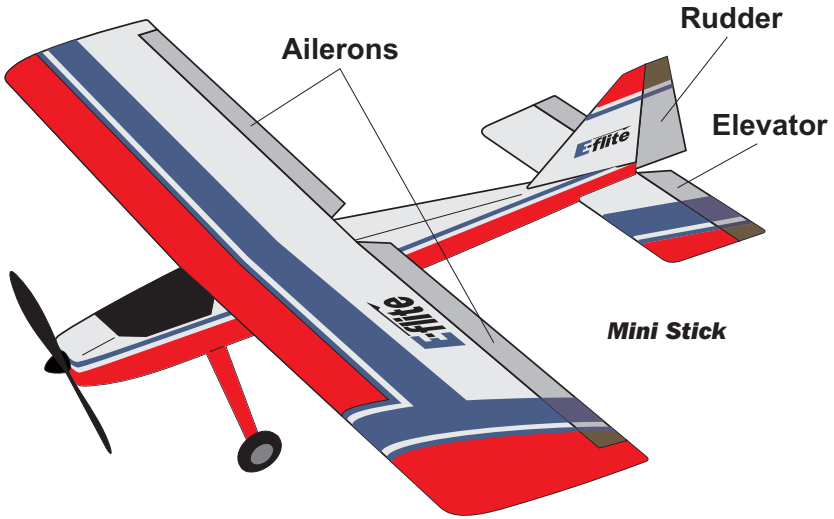
Altitude Control



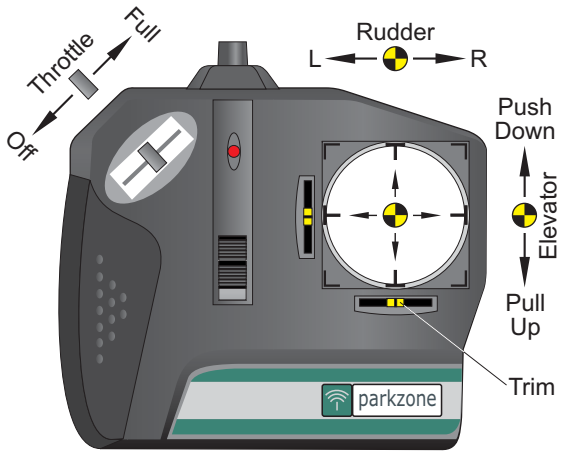
Emergency Recovery Technique

Control Functions

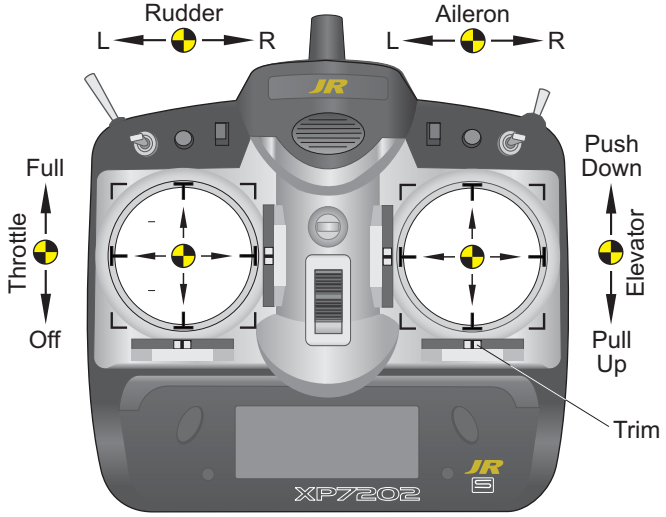




3 channel setup: Rudder • Elevator • Throttle



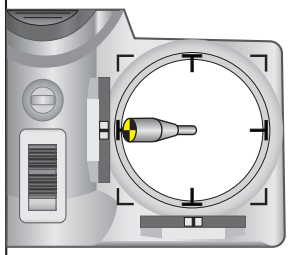
4 channel setup: Aileron • Rudder • Elevator • Throttle

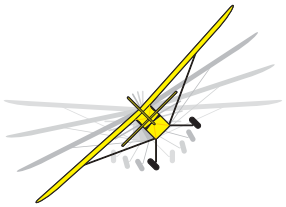


Note: Ailerons provide more precise control to, among other things, deal with the wind better. Therefore, the most significant consideration flying planes without ailerons is to avoid flying in wind.

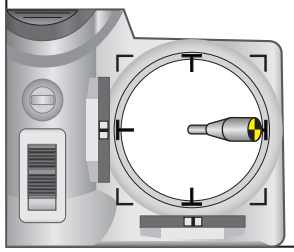
Control Effects

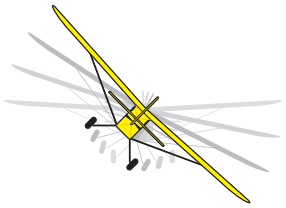
Note: If your airplane does not have ailerons, rudder control will be on the right stick with the elevator.

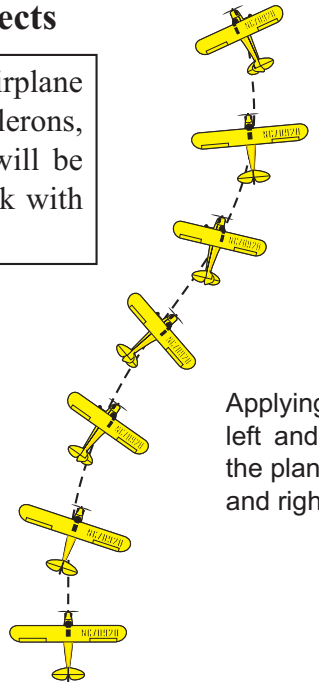




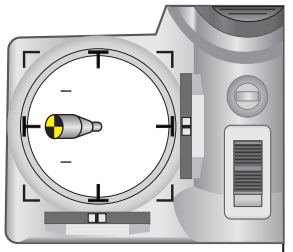
Applying the ailerons left and right **banks** the wings left and right.

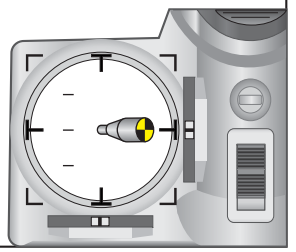




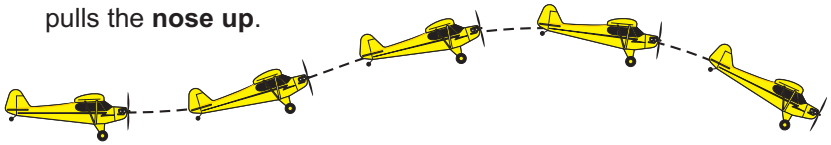


Applying the rudder left and right **yaws** the plane's nose left and right.

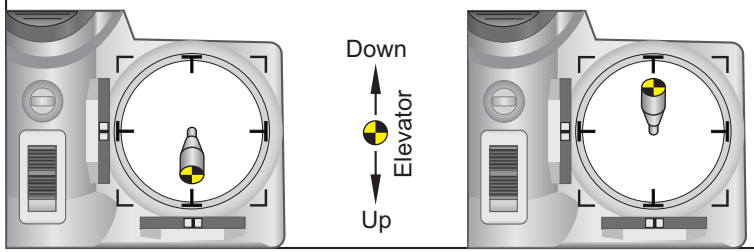




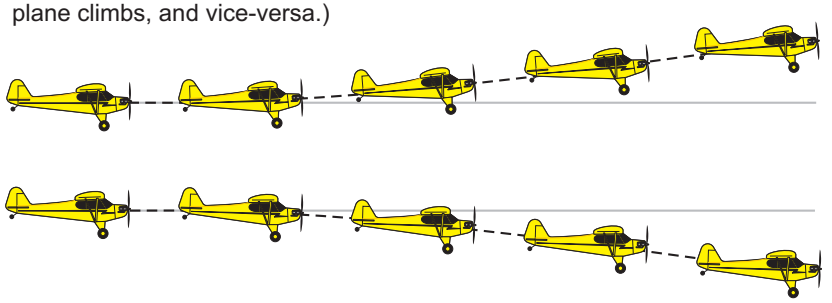
Pulling up elevator pulls the **nose up**.

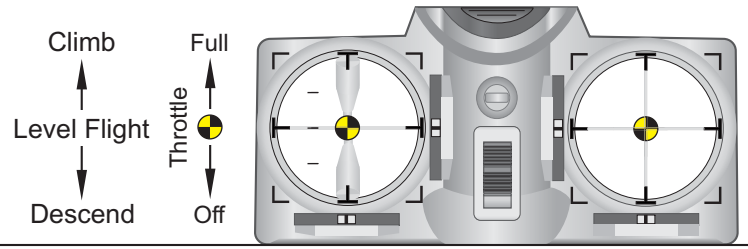


Pushing down (forward) elevator pushes the **nose down**.



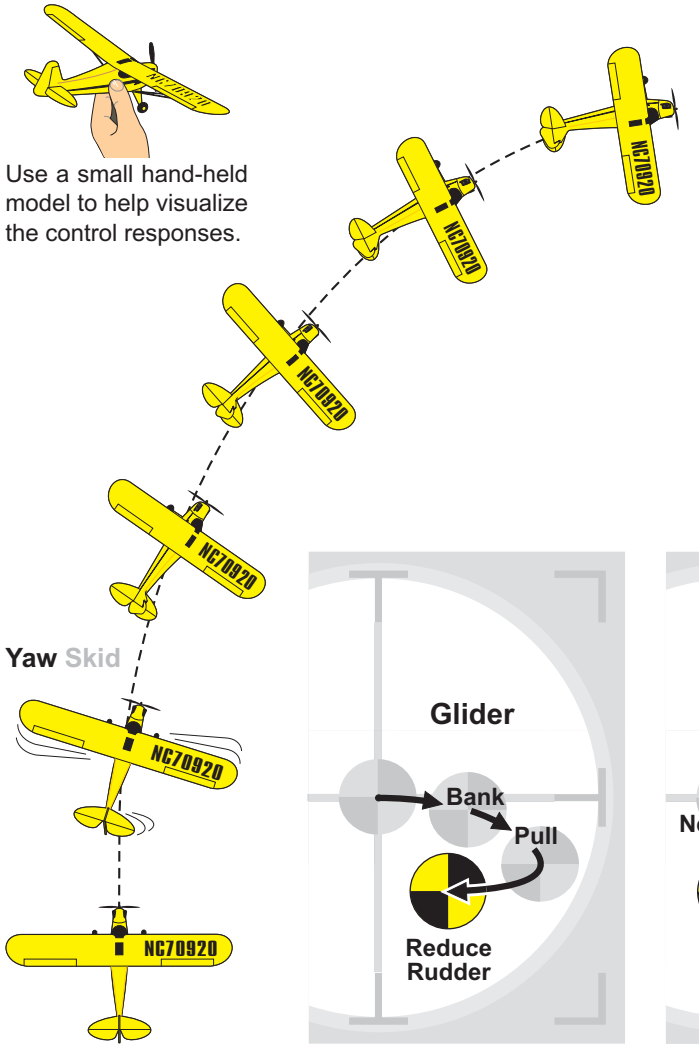
Pushing the throttle forward increases motor speed, and vice-versa. (Increasing airspeed and airflow over the wing increases wing lift and the plane climbs, and vice-versa.)





Rudder Turns

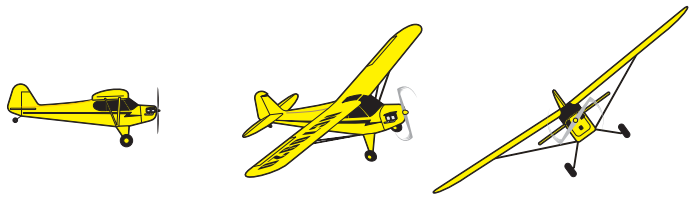
Applying rudder will yaw the nose of the airplane in the direction you want to turn. Applying rudder (yaw) also makes the wing on the outside of the turn travel faster and therefore generate more lift, causing the outside wing to rise up and bank in the direction the rudder is applied. Up elevator is 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 required to turn 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.



KPTR: To avoid diving turns, reduce the rudder once the turn has started.

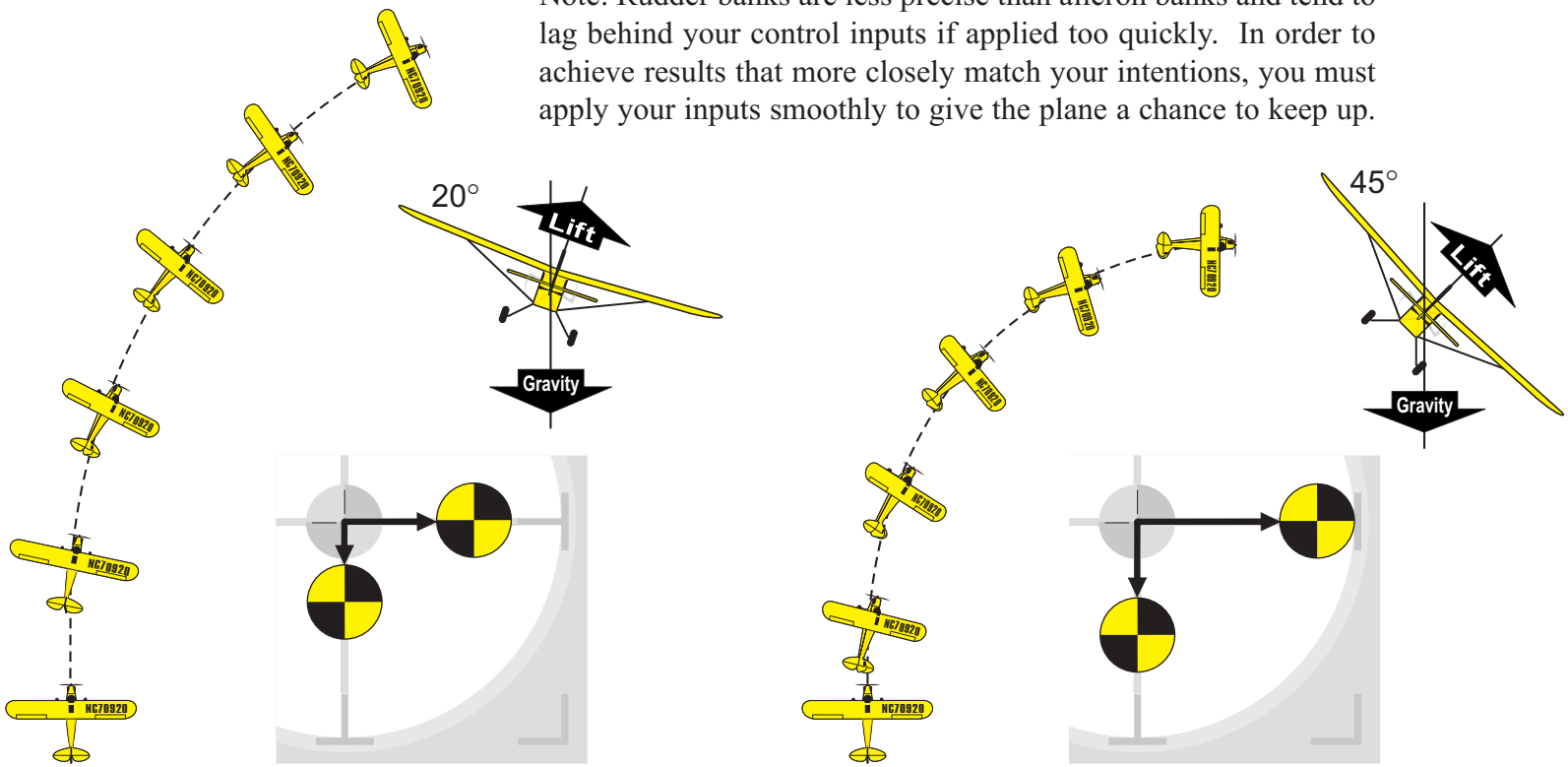
Controlling the Size of Rudder Turns

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.

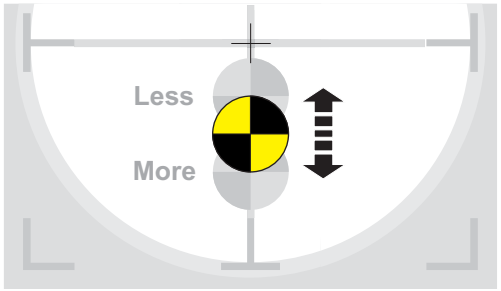
Note: Rudder banks are less precise than aileron banks and tend to lag behind your control inputs if applied too quickly. In order to achieve results that more closely match your intentions, you must apply your inputs smoothly to give the plane a chance to keep up.

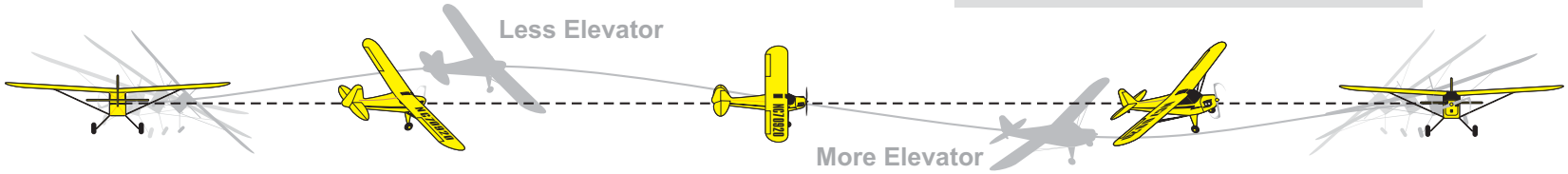


KPTR: The size of the turn is controlled by the size of the rudder input, while elevator keeps the turn level.

Elevator Adjustments and Finishing Rudder Turns

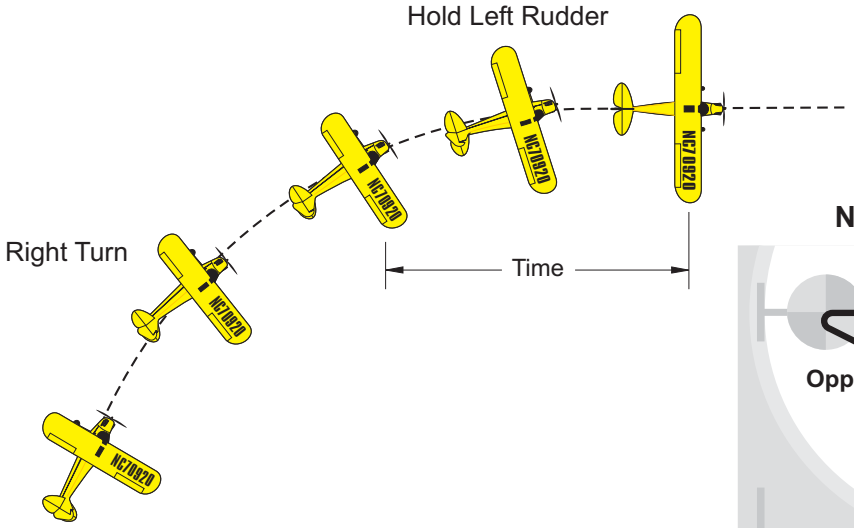
You'll need to increase or decrease (fine tune) the elevator during the turn in the event you see the airplane start to climb or descend: If you see the plane climbing, you need to lessen the amount of elevator you're holding in. If the plane starts to drop, you need to pull more elevator.



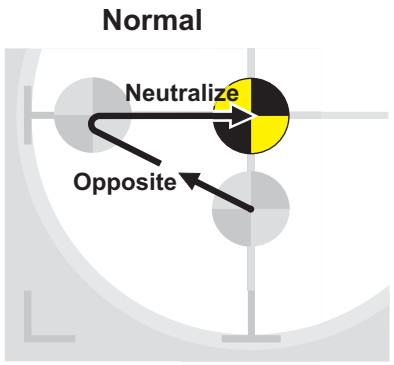


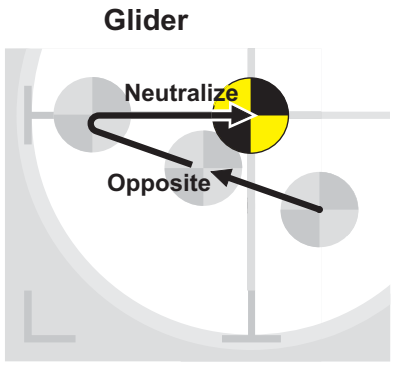
Level the wings to exit the turn. This could be accomplished with a highly stable airplane simply by neutralizing the rudder and letting the plane eventually straighten itself out, or you can pro-actively level the wings with opposite rudder.

Returning the wings to level takes longer with rudder than it does with aileron, thus you'll have to start leveling the wings prior to the point that you want the turn to stop, and then continue holding in the rudder until the wings are level.



Note: Prolonged rudder deflections tend to scrub off airspeed during the subsequent yaw/skid. Therefore, you will likely have to hold in a little up elevator while leveling the wings to keep the plane from dropping.





KPTR: Smoothly apply rudder in the opposite direction of the turn to level the wings and exit the turn.