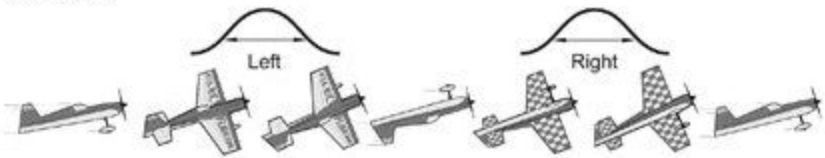
3D Rolling Harrier Rudder Warmup

The next featured maneuver is the awesome rolling harrier pass. The first phase of learning a rolling harrier is practicing consecutive rolls using only the rudder to maintain altitude. The objective during this exercise is to apply top rudder only during the segments of the rolls when it is most effective at keeping the nose up, i.e., starting approx 45 degrees before knife edge, through knife-edge and up to 45 degrees past knife edge.

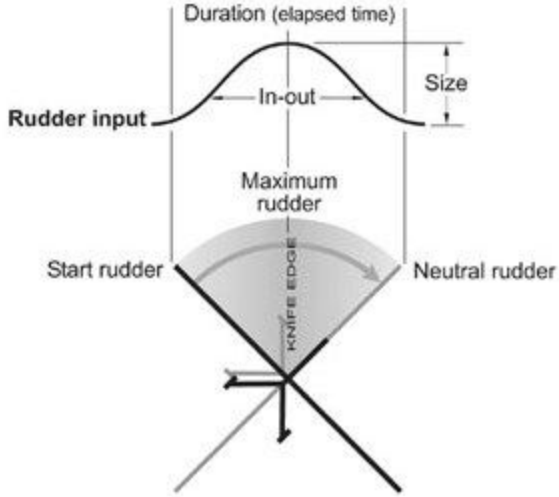
There won't be enough time to try to manage the rudder by watching the airplane. Instead, each time the wings approach knife-edge, commit to a steady "in-out" rudder control input. Then quickly reflect on the result and determine whether you need to change the size or pace of the subsequent rudder inputs to effect better results.

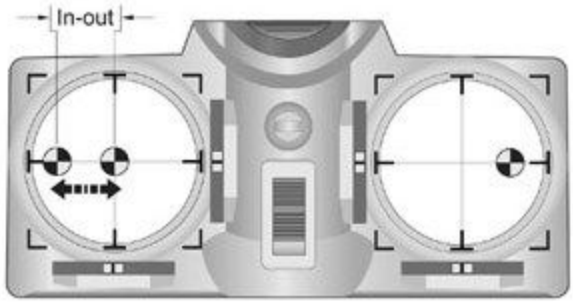
For example: Start by positioning the throttle to approx. half. Pull the nose up slightly and start rolling. If you are rolling to the right, smoothly input top left rudder "in-out" when the wings approach knife-edge. If the result is a heading change because the rudder input was too slow, i.e., held in too long, determine to speed up the pace of the subsequent top right rudder input. Or, if your first rudder input proved too small to prevent a loss of altitude, increase the size of all subsequent rudder inputs.

Note: The most common rudder mistake during rolls is a weak "opposite" rudder, i.e., when rolling right, pilots tend to input a deliberate left rudder input, but the subsequent opposite right rudder inputs tend to be much smaller. Therefore, determine to input the same amount of rudder in both directions.



Each control input during rolls can be broken down into size and duration:





KPTR: Commit to deliberate "in-out" rudder inputs, triggered by seeing the wings approaching knife-edge, then quickly reflect on the result and apply what you learned to the next rudder input.