SRCS Aerobatics Tutorial

If you have a Hint or Tip you would like to share, please drop us an email about it. All submitted Hints & Tips will have the author's name crediting them for the submission.

Loops

The LOOP is a pretty basic manoeuvre that is usually one of the first manoeuvres you will learn. First start at level flight headed up-wind. Make sure your wings are level then hit full throttle and gently add up elevator. Add the necessary right rudder to counter-act torque. As the plane proceeds in a smooth vertical circle and goes inverted. Cut the throttle to idle or just above, this way you don't build up excess speed on the down line. As the plane levels off gently release elevator, gradually apply throttle and fly away. Practice the loop until you can get a perfect circle with a constant radius. This will aide you later when you're ready for more advanced manoeuvres that require precise control of the elevator and throttle.

Immelman

The Immelman is basically a backwards Split S. To Fly one, fly strait and level and apply elevator to go up into a half loop, as the plane flies inverted (at the very top of the loop) roll back to level. IF you fly in competition, here are some tips for this manoeuvre, get the radius of the half loop perfectly round. Also the roll MUST be at the very top and right away!

Split-s

A split is a very useful positioning manoeuvre, since it turns you around and you drop a bit of altitude. To do one, start high until you get use to the manoeuvre. Fly strait and level until

the end of the field, now put the throttle to idle, and as you do this roll perfectly 180 degrees (to inverted) and as the plane rolls inverted apply up elevator to pull to level (basically a half loop) and fly away! Try to get the half loop smooth and a constant radius.

Hammerhead

The hammerhead is a fairly basic manoeuvre that is easy to accomplish and master. To do a hammerhead, fly up-wind with your wings perfectly level. Now increase throttle to full and pull perfectly vertical. As it goes up about 20ft chop the throttle to about a 1/4 and let the plane slow. As it approaches a stall, apply full rudder in either direction. It sometimes helps to hit the plane with a little throttle to get air flowing over the rudder. As the plane rotates, slowly release the rudder and let the plane go down line. Pull out at approximately the same spot where you pulled up. Try not to "dump" the rudder off as the plane rotates because this will cause the plane to waggle on the down line. Let off of the rudder gently for a smooth and very dramatic manoeuvre!

The Spin

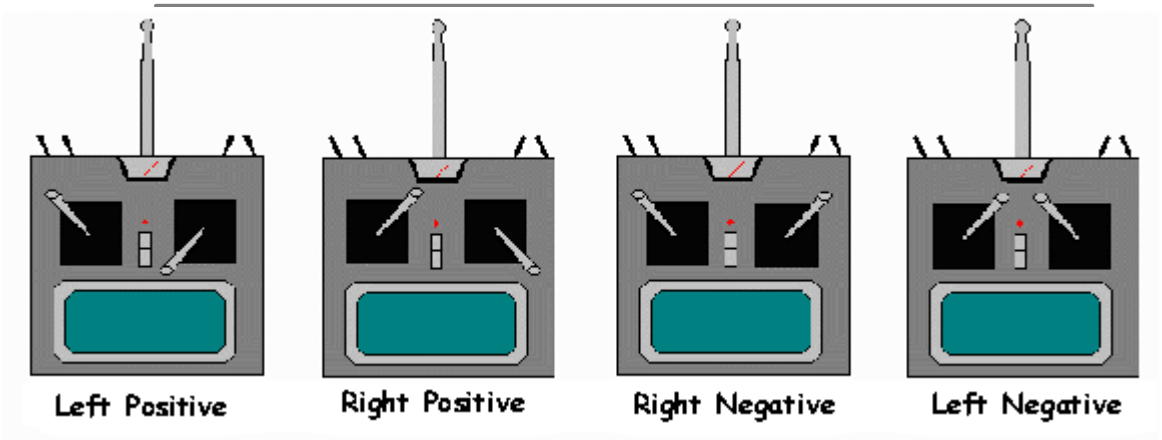
The spin is an intermediate manoeuvre but fairly easy to learn and master. First, start with lots of altitude and chop the throttle. As the plane slows down add up elevator to keep the nose up, the nose should be up about 10 degrees. The plane will stall and fall nose down. As it does this, put the sticks to the bottom left corners. The plane should begin to rotate around it's CG. To get out of the spin, release the sticks. The plane may still rotate once or twice then fall out. Some of the heavier planes may require the application of opposite rudder to get out the manoeuvre.

Flat Spin

The FLAT SPIN is a fairly complex manoeuvre and should be accomplished by the more advanced pilot. It can be a very nerve racking manoeuvre to learn, so use caution when attempting one or practice with a decent flight simulator before trying it with your favourite plane. To accomplish this manoeuvre, first enter a conventional spin and as the spin develops, SLOWLY add in opposite aileron. As you do this slowly add throttle to about half. The plane *should* flatten out. Now to recover, release the sticks and add opposite rudder and a bit of down elevator. The plane should spin 2-3 more times then fall out. The recovery is where people freeze up and their plane goes BOOM! This is because releasing the sticks doesn't stop the plane from spinning. It won't because one wing panel has completely stalled. Another version of a flat spin is to slowly add down elevator instead of aileron which produces a flatter spin. It also helps to bring the aileron stick to neutral. One tip is to start way up high so you have time to think things out. You can release the sticks to recover but it usually takes anywhere from 5 to 8 turns. It doesn't feel good to see your plane spinning in and hoping it will come out before it goes SPLAT!

Snap Roll

Snap rolls are a roll that is off axial (ie they kind of corkscrew) and are faster than ailerons alone. First, before you attempt a snap roll be sure you have the right tool for the job, that being your plane. Your plane should be an aerobatic plane with a strong wing, because a snap roll puts lots of stress on the centre joint of the wing, can be up to +/- 10Gs! Also you need lots of elevator and rudder throw. There are 2 categories of snap rolls (Positive and Negative), also called inside and outside. The positive or inside (can be left or right) snap is when there is up elevator and the snap corkscrews up then back to level, negatives or outside snap is with down elevator and the plane corkscrews below the flight path and back to level. During the positive if you were in the plane you would feel positive G's and negative during a negative snap. Now that you know what they are here is how to do them. First off you don't want to be travelling very fast because the faster you are going the more load that is put on the wing. So start with flying level at about half or just below throttle. Now pull the nose up about 10 degrees and do one of the following combinations.



The plane will perform a snap roll, multiple ones if you hold the controls. To stop rotation release the controls. Some planes will rotate a bit more then stop. Strong aerobatics designs will stop right away.

Wingtip Spin

The wingtip spin, sometimes called a knife edge spin is a very effective way to draw attention to your flight. To visualise one, imagine flying vertical like you did for a hammerhead, and when it stalls, imagine you holding your plane by one wingtip and spinning the nose and tail around, as it descends. Don't be disappointed though, if your plane doesn't spin with the nose and tail level, usually the nose is pitched up about 10 degrees. Anyways, now that you know what is should look like, heres how to accomplish one: Apply full throttle, pull vertical and fly up about 30-50ft and kill the throttle. When the plane slows and starts to stall put the sticks in the top left corners. The plane will fall into a wingtip spin! You can also do the sticks in the

top right corners but it always seems to rotate to the left better for some reason, probably due to engine torque. One tip is to start very high as the plane falls very fast! Recovery is easy, just release the sticks, and pull out. You don't have to fight it like during a flat spin because you have LOTS of airspeed! A couple of pointers that help: LOTS of throw, especially on the elevator and rudder, and a little aft CG sometimes helps.

Inverted Flat Spin

The inverted flat spin, like the upright flat spin is for the more advanced pilots and should be done with caution. However, if you have the upright flat spin mastered, the inverted one is a piece of cake! There are two ways to do this manoeuvre. The first and most common way is to roll inverted, kill the throttle and keep adding down elevator to keep it level and wait for it to stall as in the upright flat spin. When the stall occurs you put the left stick in the bottom left corner and the right stick in the top right corner and an inverted spin will start. As it spins, you slowly add opposite aileron (as you did in the upright flat spin) and add throttle as you cross the ailerons. To recover, kill the throttle and add opposite rudder. The second way only works on some aircraft designs but looks very cool! What you do is, from straight and level flight put the left stick in the bottom left corner (Throttle at idle, and full left rudder). At the same time, put the right stick in the top right corner (full right aileron, full down elevator). The plane should tumble and start to spin. Now you do the same as the first method to get it to go flat. This is a very cool manoeuvre and is quite the crowd pleaser. Some planes if you fiddle with the inputs can invert flat spin on the spot and don't lose altitude, some can even climb!

Aileron Roll/Slow Roll

Aileron rolls, like the loop is a fairly basic manoeuvre and one of the first manoeuvres that you will learn. To do a "regular" roll, pull the nose up to 10 degrees or so then apply full aileron in either direction. As the plan rolls and levels off, release the ailerons stick. To do a more advanced roll that doesn't loose altitude, apply down elevator as the plane rolls inverted then let off as it rolls from inverted. Another type of roll is a SLOW ROLL. To do one, start a roll using very little aileron so the plane doesn't roll very fast. As it rolls to 90 degrees (Knife-edge) slowly add rudder to keep the nose up. As it continues to roll, slowly release the rudder and add some down elevator as the plane rolls inverted. As it keeps rolling do the opposite, slowly let go of the elevator and slowly add rudder. Release the rudder and ailerons as the plane levels off. It helps to set your aileron dual rates to 50% (or less) and use them during the slow roll. This way you can keep the aileron stick all the way to one side so you get a constant roll rate!

Knife Edge Loop

A Knife-Edge Loop is fairly simple for the intermediate pilot to accomplish once knife edge "flight" is mastered. To do one, roll into a knife-edge then apply full rudder and if not already, apply full throttle. The plane will go up and around just like a regular loop except this one is in knife-edge flight! The problems with some aircraft designs is that during the back half of the loop (when you are coming back down!), it is like the rudder-throw was cut in half and the loops radius expands. If this happens, roll to level right now! Or your plane may do a knife edge Figure 9 :-) If your plane does slow on the back half, you will need to do your knife edge loops at a high altitude. Some key points to doing a knife edge loop are: Lots of power, and a very large rudder that has lots of throw! Knife-edge loops are real good attention getters and look really neat!