

IMAC 2007 Sportsman Sequence Narrative

This narrative was designed to aid the Sportsman Class IMAC competitor in a flight through the Sportsman sequence. It is not the intent of this article to be all encompassing in terms of judging criteria or the great benefits of learning how to read the aerobatic shorthand – Aresti. For more complete information in reading Aresti, follow this link:

<http://www.flyinggiants.com/forums/fg192/9167-aresti-made-simple.html>

It is highly recommended that if you have not trimmed your aerobatic model for neutral flight that you work through Peter Goldsmith's trimming method prior to flying the sequence. A properly trimmed model is much easier to fly and will drastically reduce your workload as you perfect the sequence. A link to Peter's article can be found on the left side of this page:

<http://www.mini-iac.com/DesktopDefault.aspx?tabid=70>

Now that you are flying a well trimmed model, let's step through the Sportsman sequence. IMAC does not require that the sequence be flown into the wind, but it is strongly suggested that you prepare to fly the sequence in both directions – you never know which way the wind will be blowing on any given day at an event. So be prepared for both! This article will assume that the wind is blowing from right to left (as shown in form "B" of the Aresti chart which can be found on the IMAC homepage).

Take off into the wind. The Sportsman sequence starts into the wind, so make a 180 degree turn at the end of the field, and pass back in front of where you are standing. Once you get to the left end of the field, perform a simple turnaround maneuver that allows you to gain sufficient altitude for the first figure such as an Immelman. Once you get near the center of the field, have your caller tell the judges that you are "in the box." You'll want to do this 2 to 3 seconds before beginning the first figure (this gives the judge's time to start judging!). From here until the end of the sequence, you are being judged, so get those wings level BEFORE you call the box.

Figure 1 – Goldfish. Near the center of the box, reduce throttle to idle, and execute a gentle push to a 45 degree upright downline. After holding this line for a short time, complete one complete snap roll. For the single snap, you may want to increase the throttle 1-2 clicks just prior to executing the snap to get good airflow over the flying surfaces and allow the plane to come out online. Hold the line after the snap to make it the same length as the line before, and then begin a gentle $\frac{3}{4}$ loop. As you near the bottom of the loop, gradually increase throttle until you have reached full throttle as the plane nears vertical. As you come over the top of the loop, smoothly reduce power back to idle. To make the Goldfish geometry better, pay very careful attention to the wings as you come over the top of the loop and INSURE that they are level. This makes the 45 degree downline much less stressful as you will be online. Hold an inverted 45 degree downline (not too shallow – a common mistake for the beginning IMAC pilot) and then execute a half-roll to upright. You likely will not have to input any

rudder during this roll. Hold the line making it equal in length to the line before the half roll. Execute a gentle pull to horizontal, level flight, and increase power.

Figure 2 – Outside Half Loop. Fly past center (you may well finish the Goldfish past center anyway), increase power to full, and complete two quarter rolls (2-of-4 point) to inverted. You should have to give top rudder (right rudder if you rolled left) during the first point, and down elevator once inverted. Make sure your wings are level but don't draw a line (downgrade), and then begin a gentle push for the outside half loop. Many pilots will push hard to avoid the earth – but a gentle push here will make the figure smooth and give you sufficient altitude for the upcoming spin. Finish the half loop upright, up high, and reduce the power smoothly as you setup for the spin. Do not let the airplane descend during this line – this will take practice and you may want to have someone standing next to you telling you if the airplane is descending.

Figure 3 – Down Teardrop. As you approach the center of the field at a high altitude, begin to reduce the throttle smoothly. As the plane slows, you will have to feed in up elevator to keep it from descending. This will gradually bring the nose up. Once the throttle has reached idle, keep feeding in up elevator until the nose drops in a stall. You will also have to be keeping the line straight with rudder – particularly if there is any crosswind and your airspeed decreases. Don't worry if the nose of the plane is cocked 45 degrees before the stall – it is most important to keep the line straight! As the nose drops, feed in rudder in the same direction as the wing that is falling – right rudder if the right wing is falling and left rudder if the left wing is falling. Once the spin begins, go to full rudder and full aileron in the same direction (you should already be at full up elevator). After 1.5 turns, neutralize all controls to stop the spin. If the nose is high, give down elevator to establish a vertical downline. Hold the downline for a moment, and then begin a gentle pull for the 5/8 inside loop. As you pass through the bottom of the loop, smoothly increase power to full and once you reach the inverted 45 degree upline, hold that line. You should be giving some down elevator to hold the line. As you complete the half roll to upright, relax the down elevator. Hold the line after the half roll until it is the same length of the line before and then gradually execute a gentle push to horizontal, level flight. Begin smoothly reducing power for the next figure, and insure that the plane does not descend during this line.

Figure 4 – Vertical Downline. Once you reach the right end of the field, reduce power to idle and allow the plane to slow. Execute a gentle push to a vertical downline and hold that line for a moment. Complete a half roll so that you are looking at the top of the airplane, hold that line to make it the same length as the line before the roll, and then execute a gentle pull to horizontal, level flight while increasing throttle. The key to this figure is to start high and execute GENTLE radii top and bottom to demonstrate the control you have over the airplane as the ground is rushing up to meet you.

Figure 5 – Cross-box Humpty Bump. This figure gives you the option of either bringing the airplane in closer to you or moving it farther out. It will probably present better to the judges if you take this figure out, but if you are finding yourself way out before you start this figure, bring it in. I will describe this figure going OUT. Just prior to the center of

the box, increase power to full, and complete a gentle pull to a vertical upline. Insure that this line is vertical before doing any rolling or you will be fighting the line all the way up. Hold the line; execute 2 points of an 8 point roll to the left (concentrate on stopping the first point right at 45 degrees to reduce downgrades). You will now be looking at the top of the airplane. Hold the line to make line segments before and after the roll equal in length, and then begin a gentle push for a half outside loop across the top. Reduce power to idle as you pass over the top and check to insure your wings are level to make the downline nice and straight. Hold this line for a moment, complete $\frac{3}{4}$ roll to the right and hold that line to make the line segments equal in length. Finally, execute a gentle pull to horizontal, level flight while gradually increasing power. You should be flying towards the left end of the field.

Figure 6 – Half Cuban 8. As you near the left end of the field, increase power to full and complete a two-point roll. Give down elevator while inverted to keep the plane from descending. Once you reach upright, immediately begin a gentle pull. Insure that you end the two-point roll with wings level to make the pull easier. As you come over the top of the loop, you will need to keep the power on longer than normal because you will be coming back into the wind. You may even need to hold some down elevator across the top to keep that radius nice and round. As you approach the 45 degree inverted downline, smoothly reduce power to idle. Hold the 45 degree line for a moment (not too shallow), and then complete a 2-of-4 point roll. You should not need rudder while in knife edge, and frequently if it is used, it makes the roll come off line. Just hesitate for a moment in knife edge and then complete the next quarter roll to upright. Hold the line long enough to keep line segments equal in length (don't get shallow here), and then complete a gentle pull to upright while smoothly increasing throttle.

Figure 7. Hammerhead. Fly towards the right end of the field, increase power to full, and complete a smooth quarter loop to a vertical upline. BEFORE the pull, make sure the wings are level to make the upline straighter (this is important every time, but especially when there is a rolling element on the upline). Hold this line for a moment, and then complete a full roll. Hold the line after the roll to make it the same length prior to the hammer. Reduce power, but leave 3 or 4 clicks of power on, and just before the plane stops moving, apply full rudder. It is almost always easiest to hammer INTO the wind if there is a cross-wind. If the wind is down the runway, hammering either left or right is OK. Once the plane starts to pivot, the throttle can be reduced to idle. One method of preventing the plane from wagging its tail after the pivot is to keep some rudder input after the pivot and slowly take it out as the plane goes down. At the bottom of the line, execute a gentle pull to a horizontal exit and increase the throttle. Try to make the entry radius and exit radius equal – don't execute a sharp pull at the bottom.

Figure 8. Loop. Although centering a figure is not a judging criteria, figures like loops are generally designed in the sequence to present best if flown center box. As you exit the Hammerhead and approach center field, increase power to full throttle. Begin with a gentle pull into the loop. Keep the power on as you near the top of the loop. Relax the elevator just prior to the top and complete a full roll. The roll should be centered on the top of the loop and should be incorporated into its radius. This is easier than it

sounds if you just roll somewhat slowly and don't use anything but aileron. The plane will naturally drop its nose as it goes through the top of the loop. Practice with loop size and roll rate will make this figure work well without worrying about rudder during the roll. As you complete the roll, smoothly reduce power to idle (if you "chop" the throttle, the radius of the loop will surely change – particularly since you are now flying into the wind) and complete the loop. As you finish the loop, smoothly increase power.

Figure 9. Teardrop. As you reach the left end of the field, increase power to full, and execute a gentle pull to an upright 45 degree upline. Hold this line to gain sufficient altitude, and then complete a 5/8 inside loop to a vertical downline. As you come over the top of the loop, you will probably have to keep power on to keep the radius the same as you come back into the wind. As you approach the vertical downline, smoothly reduce power to idle. Hold a vertical downline for a moment, and complete 2 points of a 4 point roll. Hold another vertical downline to make the line segments equal, and execute a gentle pull to level, horizontal flight as you gradually increase power.

Figure 10. 180 Degree Aerobatic Turn. Here is another figure that allows you to either bring the airplane back in towards the flightline or go out away from the flightline. Most pilots will likely choose to take the plane out, so I will describe that here. After you pass the center of the field, increase power to full. Quickly roll to about a 60 or 70 degree bank angle, and add up elevator to establish a banked turn. By holding the correct amount of elevator, you should be able to maintain both bank angle and turn radius throughout the 180 degree turn. After you have completed 180 degrees of turn, roll the wings back to horizontal. Fly a short line, wag your wings and have your caller tell the judges you are "out of the box."

Take a deep breath, fly a couple of passes back and forth (with simple turnaround maneuvers at each end) and do it all again.