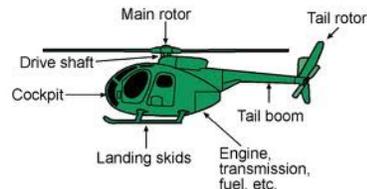




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What is Club Aerobatics?

There are already competitions and structures in place with respect to Radio Controlled Fixed Wing (FW) and Helicopters. Club Aerobatics (CA) is not to compete or replace these but merely providing an alternative to RC pilots that would like to stretch their envelope or channel an existing skill set into something more constructive whilst maintaining the fun element that got them into RC flying in the first place.



Club Aerobatics events are held at club level and both FW and heli pilots can participate on the same routine.

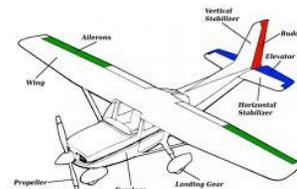
CA is not expecting pilots to purchase new hardware or additional hardware. RC pilots must be able to participate in CA with what they have while improving their skills.

Over time, a need for the more advanced competition pilots lead to another class within CA called Top Notch.

Top Notch pilots are people already competing (F3A/F3C type) but wanting to participate for fun and for Top Notch, the same routine is used, points are just harder to come by. They fly separately in their own class with their fancy kit. For the remainder of the document, Top Notch is not emphasized as they kind of know what to expect. Top Notch is scored for the same routine and elements as CA Standard.

Format of a Club Aerobatics Event

The Club Aerobatics environment is fast pace and noisy. There will be running commentary with music in the background. The event will start with a briefing during which a draw will take place to determine who is on display when. The first pilot then receives Take Off bonus for free, so not to worry if you are first. The pilots will perform in number/draw sequence and the following rounds each will move up one position. So first pilot will fly last in second round and 2nd pilot will fly first in second round and so it goes on. There are total 3 rounds but the complete competition is aimed at lasting not more than 5 hours, that is from 08H00 to 13H00 as we want to give the other club members air time for the day, not stealing all of the day at the field. In the instance where there are a zillions pilots, the numbers of rounds will be reduced to fit the time slot, we do not want to upset other club members! Try to give the normal time to fly at least late afternoon.



Some other words you might hear...The first term that comes to mind is the Routine. We do not fly Schedules, we fly a routine. The routine is discussed later on in the document. It is such that pilots



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from all levels can fly it and both FW and Heli pilots can do the same routine. Some tricks might be harder for FW but others are harder for the Heli pilots.

Sitting behind the pilot, there is a man called the Stig and he will be scoring your flight. He can be bribed before you fly each round for a maximum of 2 points.

After the briefing, demo flights are arranged so all can see what the routine should look like or at least get a decent idea. Then the fun begins with a focus on speedy flying without delays, hence the 2 points available if you take off without causing delays.

From the organizers of the day, a PC is required for scoring and a PA system for running commentary and announcements. Then get yourself a noisy club member to drive the PA... The noisy chap needs to announce pilots and call next maneuvers so that spectators can know what the hell is happening.

Usually, some fun activities are added afterward such as Limbo, etc. Use your imaginations, chase balloons, etc.

CA Standard Hardware

CA Standard hardware is limited. No fancy "Pattern Planes" are allowed, nothing 2m then. Any Stick, Fun Fly, Foamie, 3m Yak, etc can be used. We do not want pilots to spend money just to compete in CA. If a pilot wants to fly with a plane that the Stig of the day see as "Pattern" or special F3A type, the pilot will be bumped up to Top Notch. In the end of the day, we want fun, not serious competition. We want opportunities for junior pilots to learn from senior pilots.



For now, winning CA Standard on a regular basis might generate a need to be bumped into Top Notch but let us see what time brings.

What is needed from the pilot? (CA Standard)

The pilot must focus on doing precision flying. So, if you are tired of flying a circuit or doing stick acrobatics, then this is for you! Although the details are discussed in the Club Aerobatics Routine Section, let us briefly check it out.

- Only valid Club and SAMAA Members
- Your take off and landings are scored. No landing on the grass. Gmf...Landing procedure for Heli's will be pointed out during the briefing.
- You have 8 minutes to complete the routine, average flying time about 5 and a bit minutes.
- If you can have your craft on the runway, wheels touching before the previous pilot removed his craft, you earn 2 bonus points, known as Take Off bonus. This is done to make it more



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exciting and get things to move at fast pace. Heli's have no wheels but they need to land on the same spot as taken off...be accurate and fast for your 2 points.

- Before landing you have a Double-Up opportunity. Here you can do any known trick and earn double points. Make sure you stay within the 8 minutes allowed. Prop hangs might impress the judges but will take you over 8 minutes before touch-down. Rather be safe than sorry. No flying towards the crowd is allowed for both Erries or Heli's, we need to keep the people safe!
- During the flight, you need to keep the line. You stand on the flight line and a flag or marker is posted 150m on the other side and you must stay on the line above the flag. Getting to close or too far will cost points.
- You can only start your engine once placed on the runway and must kill the motor/engine before removing.
- You will note that all is happening in the middle, what happens at the ends left and right stays there.
- Remember that the height must be the same when starting and finishing a maneuver. It will make sense when done reading.
- If something loose comes from your craft during flight, you must land (or save the craft) and total score is only valid to the previous maneuver.
- If your craft have difficulties with starting...ask the Stig if he is willing to give you another chance. The default is that you miss that round and if pushed for time.....the Stig can just say next!
- Safety will always win should there be any strange activities...
- Oh, almost forgot...no special devices allowed like Gyro's etc. This is obviously ok for a Heli..(lol)
- So, if you just want to judge these pilots...now you know what to look for.



Flying Club Aerobatics against another club

Each club to select 4 pilots, 2 stigs and a team captain. The club communicates a date, venue and there you go! The difference now it that only the best score from each club for each round counts, hence making it a team sport, similar to the "golf 4 ball" type of competition.

The two team captains to take care of scoring, prizes and the other logistics.

What line? Eish...

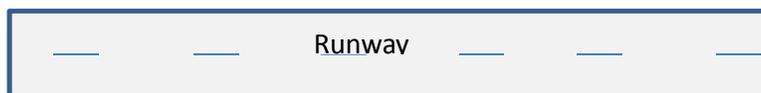
Because it is about precision, you need to maintain a certain distance. Now, before it gets very complicated, take a look at this.



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A picture worth many words..... You stand on the normal flight line with all the other pilots while practicing, not interrupting the normal scenery. If there is no marker, add a marker with a pole and plastic bag, 150m other side of the runway.

Try to stay on this line, distance, height during and after your fancy maneuvers. Obviously our brother called the Sun (without the regular page 3...) will have an influence but we are sure you get the picture? Right? Moving the line, etc? Unfortunately, wind is part of the fun and games and must be embraced or accepted as part of the regular scenery.



More about the Club Aerobatics Routine

These numbers mentioned as per the routine later. The Dots show the start and the line the end of the maneuver. By the way, these symbols or little pictures are called Aresties. (Single Aresti). In case the weather is crappy, Google a bit to see all the various maneuvers that comes up.

This was originally done for FW, hence the reference to wind, etc. Please allow variances for Heli pilots and logic.

1. Taking Off

- a. Remember the Take Off Bonus
- b. Take off against the wind.
- c. At a safe height, turn 90 degrees away and then do 270 degrees to bring you on the 150m parallel line.
- d. Maintain the same height once you started doing the 90 degrees turn.
- e. Fly past, this is for "calibration" so you can do trimming, align the craft and get plane at a nice comfortable height.



2. Loops



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- a. You made your turn and come back to the marker.
- b. Now do 2 loops, all smooth and both the same size
- c. Remember to end the loops at the same height you started them.
- d. The loops must be symmetrical above the marker.
- e. When done, continue and turn back.

3. Roll on Centre

- a. Easy, just do a complete roll in any direction in the middle.
- b. Do not loose height or direction during the role.

4. Stall Turn

- a. Back to the middle, pull up straight
- b. Do a $\frac{1}{4}$ turn so you can see the craft
- c. Do a Stall turn at the top
- d. While coming back to mother earth, do another $\frac{1}{4}$ turn so you can fly opposite direction out.
- e. The idea is that while flying up, the distance before the $\frac{1}{4}$ turn and the distance to the stall turn itself to be the same.
- f. Again the focus is precision, symmetrical and stylish!
- g. After this you need to gain height for the Split S coming at number 5.



5. Split S

- a. By now you are flying high, approaching the middle one again. This maneuver is actually coming from the fighter pilots in early days. Google this to learn more.
- b. As you want to keep it symmetrical, before you reach the middle, do $\frac{1}{2}$ Roll to get your plane inverted.
- c. Immediately after that, you need to pull to make a nice $\frac{1}{2}$ circle.
- d. And off you go to turn again.

6. Inverted

- a. This is easy. 2.5 seconds before the middle, do you $\frac{1}{2}$ roll and fly inverted for 5 seconds before you turn it again to be in the up position.

7. Cobra

- a. This can be tricky as the wind will play you....
- b. In the right time, pull up to climb at 45 degrees.
- c. When you reach the middle, push down to decline at 45 degrees again.
- d. The start and end at the same height.....
- e. Since it sounds so easy, it bites so easy.

8. Vertical Upline

- a. This is fairly easy.
- b. Continue until in the middle, then pull straight up, 90 degrees vertical.



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- c. You need to judge the available power, if you over cook the upline your craft might disappoint you by falling back.
- d. At a decent, workable height, push to fly out straight.

9. Half Cuban

- a. No cigar here.
- b. You need to practice this one to get the symmetry correct.
- c. Fly straight, then do $\frac{1}{2}$ a loop.
- d. When reaching the top, continue a line at 45 degrees down. Your plane is now inverted.
- e. In the middle of the “flying down”, do $\frac{1}{2}$ roll to bring it upside again.
- f. Once again, the “before roll” and “after roll” lengths to be the same.
- g. The start and finish heights also the same.

10. Double Up

- a. Now you can do a free trick for which you will earn double points.
- b. It must be a known maneuver, rather check before you waste points on an unknown trick.

11. Landing

- a. By now you should be opposite of landing direction.
- b. Do a nice slow 180 degrees turn away from you while maintaining height and fly past.
- c. Do another 180 degrees toward you to bring you to the runway and land.
- d. No bouncing, smooth, soft and smart like you are used to do.
- e. If your craft is at risk, rather lose the points and keep the craft for the next competition.



How to earn points

You might try bribing, who knows, maybe the judges are needy? Or maybe not...

Let us look at principles or things that can help you.

- The term precision aerobatics means full control at all times.
- No sudden jerky movements, all smooth and elegant.
- Pay attention to the starting and finishing heights of maneuvers.
- Pay special attention to the distance you maintain as well as the line of flight you maintain. Moving up and down all the time or further or nearer will cost you points.
- Keeping those wings level will make your life so much easier.
- Do not speed, it kills good scoring! If you fly slowly, you have more time to prepare for the next.



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- Work on a turn strategy for the ends. If you turn on a horizontal plane, it is difficult to get back onto the flight line. If you turn vertical, you need to budget power usage.
- Mentioned plenty of times but symmetrical on the middle is key.

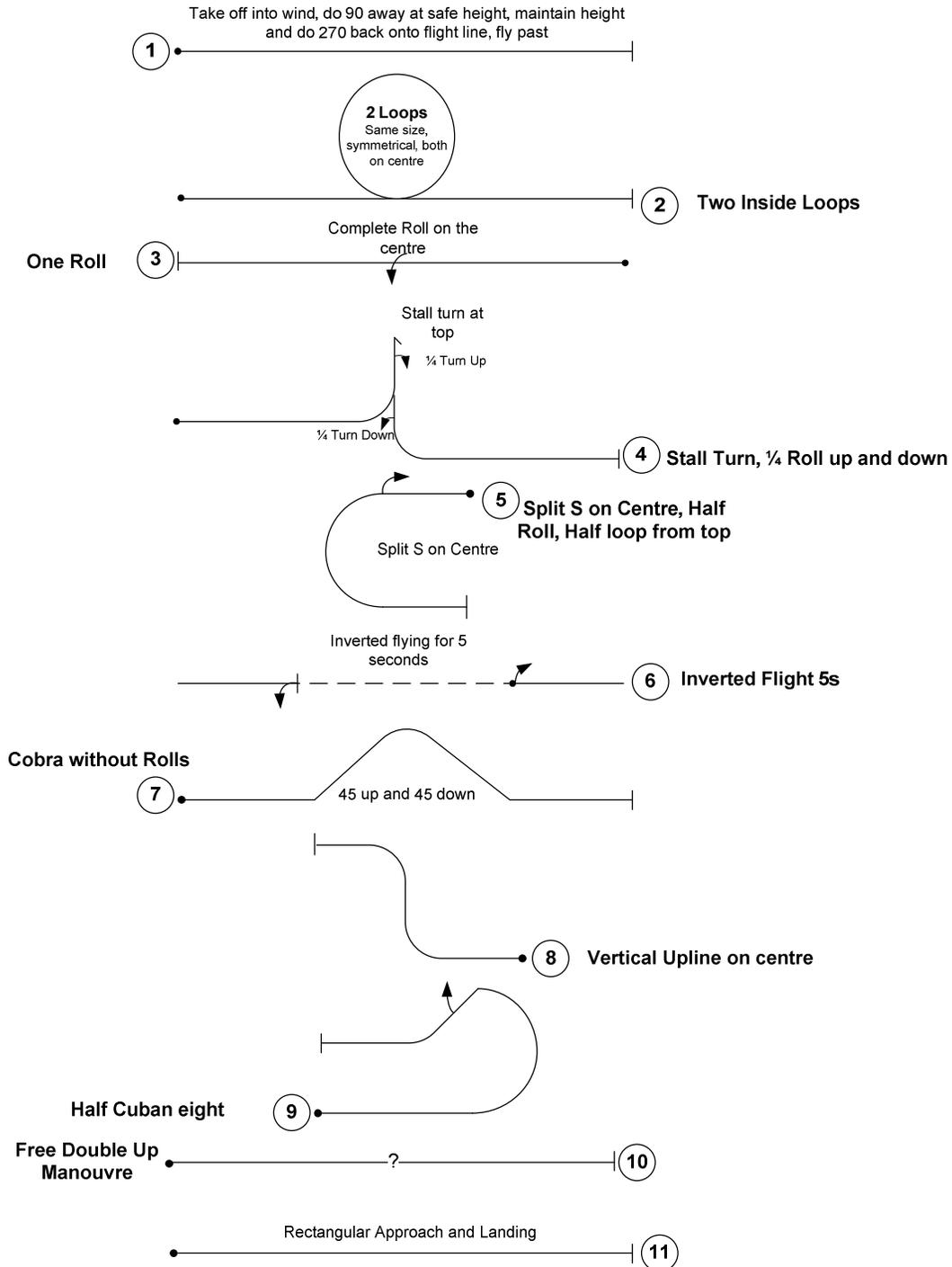
Bribing allowed!

- You are only allowed to bribe during your 8 minute slot and a maximum of 2 point are allowed for bribing.
- Must do so all can see.
- A bribe for each round is allowed to earn maximum points! Do not miss the opportunity!

Club Aerobatics Routine Version 1.0



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Club Aerobatics Scoring

Scoring is not that difficult and he who can collect most points in all flights will win the day! No rocket science, let us keep it simple.

- You will note a term called a K-Factor. This merely means a factor 1 is easier than a K2.
- If it is a K2 maneuver, then your score is doubled.
- If you get an all perfect routine, you will get 102.5%
- The Double Up maneuver it a “free” opportunity. Even if you do a K1 maneuver, you will get double points as if a K2.
- Work through the Sample score to see how we got to 63.75%.
- If there are say 3 Stigs, their entire scores are added with the K Factors included and your total score is divided by 3x160 which is 480 to get to a percentage score.
- Since this is a new activity, there might be changes over time to make things work or work better.

| | K | Sample Score | Calculated | Perfect |
|---------------------------|---|--------------|---------------|----------------|
| Runway Max 2 | 1 | 2 | 2 | 2 |
| Take off | 1 | 8 | 8 | 10 |
| Two Inside Loops | 2 | 7 | 14 | 20 |
| One roll middle | 1 | 5 | 5 | 10 |
| Stall Turn | 2 | 4 | 8 | 20 |
| Split S | 2 | 8 | 16 | 20 |
| Inverted Flying | 1 | 7 | 7 | 10 |
| Cobra | 1 | 9 | 9 | 10 |
| Vertical Upline | 1 | 3 | 3 | 10 |
| Half Cuban 8 | 2 | 4 | 8 | 20 |
| Double-Up | 2 | 7 | 14 | 20 |
| Landing | 1 | 6 | 6 | 10 |
| Bribe points Max 2 | 1 | 2 | 2 | 2 |
| Total Reworked | | Total | 102 | 164 |
| Percentage/160 | | | 63.75% | 102.50% |



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What will you gain from Club Aerobatics?

You will see many aspects of your flying improving, let me try to list, you will know if applicable or not...

- Keeping the line will teach you more about that thing at the end of your plane called a Rudder. Not many RC pilots truly use the rudder to the fullest. Very often you see senior pilots flying with only one hand once in the air.
- In keeping your craft steady with smooth turns you will almost by default start to do serious setup of your craft. You will be surprised to note the difference in flying “out of the box” and flying with a decent trimmed craft.
- You will learn about changing the CG or check the left and right weight, making sure your craft is fully balanced and can fulfill your performance requirement.
- Once the competition get to a serious level and there are prized to be won, revisiting all the settings on your radio might be good idea. Maybe you are well aware of changing end points but you might want to check those Expo settings again. Ie, a good role takes 5 seconds. Have you ever checked that?
- You might want to investigate mixes, ie. Rudder to Aileron mix, those functions you saw in a menu and they looked interesting... So, you might even learn more about your radio too!
- Another aspect left in the dark room is throttle control. This “I use only one hand” experienced pilots go at full throttle at all times. Not to ignore what they achieve is that mode but you would need to apply some decent throttle control. When to cut for a stall turn, when to add throttle and so it goes on.

So, as you can see, there are many aspects that you can trim or fine-tune, making you a real mature, precision RC pilot. From here your confidence will be on the high end and something like a Gold proficiency will feel like a walk in the park! Putting you in full control of your hardware is what we all want and this is a sure way to get there.