

What is "Pattern"?

Radio Controlled Precision Aerobatics is usually referred to as "pattern" since a predetermined "pattern" of maneuvers is flown. Some guys fly in pattern competition to try and win, but most fly to have fun and improve their flying skills.

What are the "Classes"?

There are five pattern classes: Novice, Sportsman, Advanced, Masters, and FAI-F3A. Each class is more difficult than the previous both in complexity and number of maneuvers. There is a point system which determines how quickly one will advance from one class to the next.

Why fly Pattern?

Flying pattern maneuvers won't necessarily make a person a better flyer, however the practice that goes along with it will. Most of the maneuvers flown in pattern are ones that may be flown at any given time by a sport flyer, but the challenge is in doing the maneuvers in their proper sequence, without any pauses, and flying them as smoothly and precisely as possible. Practice is the best way to improve one's flying, and the discipline involved is what makes pattern such a good tool to do so.

What equipment is needed to fly Pattern?

First of all, an expensive pattern plane is not needed to get started; most sport planes are all quite capable of performing the Novice and Sportsman class maneuvers with ease. (The only real limitations on equipment is that you can't have an engine larger than .61 two stroke and 1.20 four stroke.) A plane that rolls well and has some inverted capability is all that is needed for the Novice class. As one begins to get a handle on the maneuvers and starts to move up to the higher classes, then they should think about getting a pattern plane.

One could spend lots of money on a pattern plane, but when first starting out it is probably wiser to spend money on fuel, aka: PRACTICE. While the Novice maneuvers are all relatively easy, the difficulty comes in doing each one in sequence in front of judges.

Contest Structure and Scoring

When all the contestants in one class have flown in front of the same set of judges, that is called a "round". The flights are usually scored by two judges (there could be more). They grade each maneuver on a scale of 0 - 10 based on accuracy (usually referred to as "Geometry") and smoothness. Each maneuver has a difficulty level assigned to it, called a "k-factor" and the score for each maneuver is multiplied by this number. In the Novice class, most maneuvers have k-factors of 1 or 2, with the three loops being the only kf 3 maneuver. All of the judges scores are totaled, and at the end of the round the scores are normalized.

Normalization means that the person with the highest raw score during that round gets a normalized score of 1000, while everyone else gets a percentage of 1000 based on their raw score. For instance, if the person that won the round had a raw score of 200 and someone else had a raw score

of 150, then the first person would get a normalized score of 1000, while the second person would get a normalized score of 750. Normalization helps to even out the effects of having low scoring judges on one round and easy judges on another round.

Usually, 5 to 6 rounds are flown at a two day contest, weather permitting. Each contestant gets one score for one round, and some of the low scores are dropped. The number of low scores dropped depend on the number of rounds flown. If less than three rounds are flown, none are dropped. If three to five rounds are flown, one score is dropped. If six or more rounds are flown, the best four scores are kept. After the low scores are dropped, the rest are added together to give a final score, which determines the winner in each class. At an AMA 1A contest, trophies are usually given to the 1st place winner in each class. At 2A contests, trophies are given through third place.

What is "The Box"?

The "box" is the area of the sky in which all of the maneuvers are to be flown. Looking straight out across the runway is the center of the box. To the right and left of the center (60 degrees each way) are the left and right boundaries of the box. All scored maneuvers (except takeoffs and landings) must be flown inside the 120 degree box. The pilots must announce to the judges when their plane is entering or leaving the box. The center, left and right box boundaries are usually marked by poles or lines drawn on the runway. In addition to the left and right boundaries, there is a 60 degree vertical limit as well. If during a maneuver the plane goes outside the box, the part of the maneuver that is out is not judged. If half the maneuver is out, then the highest score possible is a 5.

In addition to the left, right, and vertical limits, there is a distance limit as well. If the plane is flown far enough away to make it difficult to see the attitude of the plane, then the judges may start deducting points. Technically, the distance limit of the box is around 150 meters, which is plenty of room to fly any of the maneuvers.

What to expect.

The Contest Director (CD) will hold a pilot's meeting at the beginning of the contest, and may additionally call meetings to discuss special situations (such as weather conditions). He will discuss any special situations that exist at the field. He will also announce the classes that are up to fly first, and what the flight order is for the first round. At that time the location where the flight order is posted can be seen so that the contestants can check it during the contest. The contestants will also see the location of the transmitter impound and frequency control.

Flight Line

The flight order is usually determined by random, with the only exception being frequency conflicts. The CD (or line director) will try to keep people on the same frequencies separated in the flight order enough so that there will be plenty of time for one contestant to turn in a freq pin and the next one to pick it up.

There are three "ready boxes" in which the planes that are 1st, 2nd, or 3rd up to fly will be placed, and the contestants are expected to be ready to fly when called upon. If one contestant can't fly or finish a whole flight, then the next one must be ready to go. This allows the contest to run quickly, and may mean getting an extra round in (ie: chance to move up).

As a matter of courtesy most contestants will not crank their engine in the proximity of a pilot that is flying. Most will wait until the person flying has landed before firing up their engine for takeoff. Also, all contestants will let their helper carry their plane to the runway for takeoff, rather than risking a noseover and the consequent restart. This also helps to keep things moving along. A helper will also quickly retrieve the plane after it has landed so that the next flier can immediately takeoff.

Keeping Score

During the contest the score-sheets must get from the judges to the scorekeeper, and at most local contests the judges give the score-sheets to the contestant to do so. Usually the scorekeeper is close to the transmitter impound, so when returning the radio at the end of a flight, the scores can be turned in as well. After all the contestants in a class have finished a round, the round scores for that class will be printed and posted.

A special situation that may exist is when one class is split up on two flight lines. In that case, every contestant must fly in front of the same set of judges before the scores can be normalized, so two flights must take place before normalized scores can be computed.

Novice Maneuvers

Takeoff (liftoff in front of judges)
(enter box)
Straight Flight Out (center)
1/2 Reverse Cuban 8 (turnaround)

Straight Flight back (center)
 (exit/enter box)
 Stall Turn (pull-up centered)
 (exit/enter box)
 Immelmann Turn (pull-up centered)
 Split S (turnaround)
 Three Loops (centered)
 (exit/enter box)
 One Horizontal Roll (centered)
 (exit box)
 Landing (touch in designated landing area)

Some maneuvers, such as the Immelmann - Split S - Three Loops, are flown together in the box. Every place in the sequence where "exit/enter box" is noted, the pilot will call "leaving the box" and proceed to fly out of the box, turn the plane around, and re-enter the box, again he will call "entering the box".

Some maneuvers are centered, and the rest are turnarounds. The takeoff should be announced (ie: "takeoff beginning now") and the liftoff should be smooth and in front of the judges. Once the plane is six feet high, the pilot will call "complete". When landing, the pilot will call "landing beginning at six feet". The landings should be inside the designated landing area (usually 50 ft on either side of center) and should be flared nose high. (The CD may alter the takeoff/landing judging criteria due to the local field conditions.)

The AMA rule book has a fairly complete description of each maneuver, and the judging criteria for each. The rule book can be purchased from AMA.

Where are the contests?

In the back of Model Aviation magazine, there is a contest calendar containing locations, dates, and people to contact (usually the contest director). Each type of competition class is given a number code. The Novice, Sportsman, Advanced, Masters, and FAI classes of pattern are codes 401, 402, 403, 404, and 406 respectively.