

Senior Pattern Association

2009-2010



OFFICIAL COMPETITOR'S GUIDE

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SPA EVENT REGULATIONS

OBJECTIVE: To control by radio a model airplane so that various planned maneuvers may be accomplished. The criterion is the quality of performance, not the mechanism of control. Maneuvers shall be flown and judged according to the Senior Pattern Association Competitors Guide. Maneuver descriptions and downgrades found in this Guide are taken exactly as they appeared in the AMA rule books prior to January 1, 1976. No corrections or changes of any sort have been made. All contest functions are subject to the contest director's discretion.

SECTION I - COMPETITORS GUIDE

1. **GENERAL:** Entrants in SPA contests will be grouped into classes by a combination of age and pattern events. Specified aircraft and engine requirements also apply. SPA membership is required to compete in Expert and Sportsman events. Membership is not required for Novice. If you fly in Novice and wish to compete for trophies, you must be a member of SPA. If you are not a member, you will receive a certificate of participation. To qualify for points or official standing within SPA, all aircraft and classes of contestants shall use approved equipment. Different awards for non-SPA legal entrants may be presented at the discretion of the Contest Director.

a. Age Groups: The Novice and Sportsman pilots will fly as one class each, with no grouping by pilot's age. The Expert class will have two age groups as follows:

- (1) EXPERT - Up to fifty-nine (59) years old.
- (2) SENIOR EXPERT - Sixty (60) years old and up.

Any pilot age 60 and older may elect, once each year, which of the classes he will fly.

b. Patterns to be flown: Various individual maneuvers and maneuver schedules for each of the pattern events are shown in Section III. These are:

- (1) Novice (All Age Groups)
- (2) Sportsman (All Age Groups)
- (3) Expert (Regular and Senior)
- (4) Antique Sportsman
- (5) Antique Expert

c. Aircraft/Engines: A listing of known approved aircraft is available for Regular Pattern and Antique Pattern. Any model which meets SPA standards is eligible, even if not on this list. The contestant is responsible for documenting the model to SPA if it is not on the list. Retractable landing gear is not legal. Flaps may be used only if on the original plans. A proper muffler must be used, but not tuned pipes. Pumps may be used, but no air chambers or oversized carburetors. Additional specific requirements by pattern event are:

- (1) Regular Pattern
 - (a) Any side exhaust two-cycle engine up to .61 cubic inches.
 - (b) Any four-cycle engine up to .91 cubic inches with no air chamber or super charging of any kind.
 - (c) Any model aircraft designed and flown before January 1, 1976.
 - (d) Electric motor powered aircraft weighing no less than 5 pounds, ready to fly, and generating no more than 1400 watts

on a fully charged battery shall be allowed.

(2) Antique Pattern

- (a) Any side exhaust two-cycle engine up to .61 cubic inches.
- (b) Any four-cycle engine up to .71 cubic inches with no air chamber or super charging of any kind.
- (c) Any model aircraft designed and flown before January 1, 1967.

(3) Novice Pattern

- (a) All age groups combined.
- (b) Any SPA approved airplane or any airplane with a wingspan of 72 inches or less, and using a four stroke engine no greater than .91 cubic inches with no super charging of any kind or a two stroke engine no greater than .61 cubic inches is legal to be flown in this class. Pilots flying non-legal SPA airplanes may participate and be judged, but their scores will not be included in the tabulation of final results.

d. Radio: All radio equipment and operation must conform to the regulations of the FCC (Airplane frequencies, narrow band). All older wideband transmitters are illegal after March 1, 1998.

2. COMPETITION CLASSES: The combination of pattern flown and age group of the contestant establishes the class within which the contestant will compete. The Contest Director will decide and announce which of the seven possible classes will be flown. Age groups may be combined for Antique events and /or a single pattern may be selected. This decision will be announced prior to the contest. Patterns shall be flown as listed if the event is part of the contest.

3. CONTESTANT CLASSIFICATION: At his first pattern contest, a contestant may enter any one pattern class within his age group at his own option.

a. A contestant may promote himself voluntarily to a higher class at any time.

b. Any contestant who has placed 1st in Novice or Sportsman 3 times must move up to the next higher class the following year, provided that each 1st place win had at least two other contestants in that class. Any Novice contestant who accumulates a score of fifty points or more in his or her best four contests during the regular season must move to the next higher class no later than the end of the season in which the points were accumulated. Points garnered in the Masters event are excluded.

c. A contestant entering the Antique event, in addition to a Regular event, must fly the same class as his Regular event.

d. Age groups may be combined for Antique events at the Contest Director's option.

4. OFFICIAL FLIGHT: There is an official flight when an attempt is made, whatever the result.

- a. There is an attempt when:
 - (1) The pilot announces the start of the takeoff maneuver
 - (2) The model fails to commence the takeoff maneuver within the three (3) minutes allowed to each competitor.
 - (3) If the engine stops after the pilot has announced the start of takeoff and before the model is airborne, it may be restarted within the three (3) minute period. However, no points will be awarded for the subsequent takeoff maneuver.

- b. Each contestant is entitled to one (1) attempt for each official flight. An attempt may be repeated at the discretion of the Contest Director if it has been interrupted due to a circumstance beyond the control of the contestant.

- c. Contestants must be present and ready when they are called to the flight line. Once a round is complete, there will be no makeup flights. Contestants who are not present will receive zero (0) points for each flight for which they are not present.

- d. The official flight is finished at the moment the plane reaches the end of its landing roll. At this point, the contestant announces “flight complete” and immediately taxis his plane off the runway to whatever area the Contest Director designates. If landing was dead stick, the pilot or his helper shall retrieve the plane as soon as permitted by the official in charge of the flight line.

5. FLIGHT PATTERNS AND MANEUVER AREA: The maneuver schedules of all classes must be executed in the order listed during an uninterrupted flight within the maneuver area designated by the Contest Director. Maneuvers must be performed where they can be clearly seen by the judges.

- a. Center maneuvers must be performed centered in the maneuver area in a plane exactly perpendicular to the judges line of sight to the model. Infractions are cause for downgrading in addition to those downgrades listed in the Description of Maneuvers, Section III. The Contest Director will clearly mark the center line for each flight line.

- b. Each time the model passes in front of the judges, a maneuver must be executed, excluding listed trim passes and fly bys. In the maneuver lists (U) upwind and (D) downwind denotes mandatory maneuver orientation. The orientation, or direction of flight, shall be determined by the direction of takeoff.

- c. The direction of takeoff shall be announced to the judges by the Contest Director prior to each round, or subsequently, if direction of the wind dictates.

- d. If a maneuver other than landing is done out of order, it shall be scored zero (0). Judges may inform the pilot or his helper. He shall be judged on the remaining maneuvers, providing they are executed in the proper sequence. If an illegal pass (crossing the line perpendicular to and centered on the judges) is made, the maneuver which should have been executed shall be scored zero (0).

e. In all classes, the contestant or his helper must call out the name of the maneuver, the initiation and completion for all maneuvers.

f. Most in-flight maneuvers will be positioned on a line parallel to the runway at a distance no greater than 300 feet, and at a height less than 60 degrees from the judges' viewpoint. Exceptions as to distance are granted for the Procedure Turn, Figure Eight and Traffic Pattern maneuvers.

g. All in-flight maneuvers will be preceded by straight and level flight for 50 feet after the announcement of the maneuver before execution, and 50 feet after completion of the maneuver before announcement of completion. Exceptions: In Novice, only before Straight Flight Out and after Straight Flight Back. In Antique Sports, only before Straight Flight Out and after the Figure Eight. In both Novice and Antique Sportsman, after the completion of the Traffic Pattern, "Landing will begin a 6 feet" shall be announced.

6. POINT SYSTEM: All maneuvers shall be judged and scored individually on a basis of ten (10) to zero (0) to the nearest one half (1/2) point, with each individual maneuver score being multiplied by an assigned "K" factor degree of difficulty modifier. The flight score is the sum of each score multiplied by its "K" factor.

a. In all classes, the winners shall be those contestants with the highest individual flight score if only one (1) round is flown. If two (2) or three (3) rounds are flown, the highest total of the best two (2) flight scores. If four (4) rounds are flown, the highest total of the best three (3) flight scores. If five (5) or more rounds are flown, the highest total of the best four (4) flight scores.

b. Normalization of flight scores is not required. However, it is a Contest Director's option.

c. Annual Points Championship. The SPA Annual Points Championships is structured as follows:

- (1) Each pilot's four best contest points scores will count toward his final points total. A pilot must fly in the Masters to be eligible for the Annual Points Championship. The Masters will constitute each pilot's fifth contest points score.
- (2) First Place - 5 points; Second Place - 4 points; Third Place - 3 points; Fourth Place - 2 points; Fifth Place - 1 point. In addition, one point is awarded for each person the contestant beats.
- (3) Points awarded at the Masters count one and one-half times toward the total points.
- (4) Individual points championship winners will be recognized at the Masters and on the SPA Web Site.
- (5) All classes except Novice shall be eligible for points championship. There shall be no fly-off for the Novice class.

7. SAFETY DECLARATION: Considerations of safety for spectators, contest personnel and other contestants are of utmost importance during the event. The following safety provisions must be observed. (Also see Safety Rule Regulations, SPA By-Laws.)

- a. At all sanctioned contests, each competitor shall sign an AMA Flight Safety Declaration.
- b. The Contest Director has the authority to perform safety inspections of any equipment.
- c. The "Flight Line" shall be defined as a straight line, infinitely long in both directions, in front of which all flying is done and in back of which all officials, contestants and spectators are positioned. The Contest Director may modify this to allow for special flying field situations.
- d. Dangerous flying of any sort, or poor sportsmanship of any kind, shall be grounds for disqualification of any contestant.

SECTION II - JUDGES' GUIDE

1. PRINCIPLES: The principles of judging an RC model should be based on the perfection with which the model performs each maneuver described in Section III. The main criteria used to judge the degree of perfection are:

- a. Precision of the maneuver
- b. Positioning or display of the maneuver
- c. Size or dimensions of the maneuver
- d. Smoothness or gracefulness of the maneuver

All of these criteria should be judged to determine the final score for each maneuver. These criteria are discussed below.

a. Precision: Grading of a maneuver's precision will be based on how well the model flies the path of the individual maneuvers as described in Section III, Description of Maneuvers. All straight lines, both horizontal and vertical, will be graded on the path flown by the model. Changes in attitude of the model to maintain a straight path will not be reason for downgrading.

- (1) The judge should form an image of the forthcoming maneuver based on using the straight and level entry. The absence of a definite entry into a maneuver increases the difficulty of judging its precision. The straight and level exit from a maneuver is one of the more valuable portions of a maneuver in evaluating how well the intended course of the maneuver was followed. Therefore, the absence of a well defined straight and level entry or exit should result in downgrading.

- (2) Failure to call the maneuver, the beginning and completion of the maneuver should result in a downgrade.

b. Positioning: All scored maneuvers, except landing and takeoff, must be performed within the maneuvering area. The center maneuvers in all classes should be performed in the center of the maneuvering area in a plane exactly perpendicular to the judges line of sight to the model.

- (1) The diagrams used to describe the maneuvers in Section III are intended to represent the geometry of the maneuver. They are intended to define the best view of the maneuver to be presented to the judge. "End on" or "canted" presentations should be avoided, unless the maneuver is intentionally offset (with permission of the judges) to avoid the sun or another aircraft.
- (2) No bonus for exceptionally low altitude is justified. The entry and exit altitudes for most maneuvers should be the same. Exceptions are the Immelman Turn, Three Turn spin and Traffic Pattern. Resultant downgrades should be proportionate to the difference.

c. Size: Flying so far out as to make evaluation of a maneuver difficult should be downgraded. The main criterion here is visibility. Maneuvers performed on a line greater than 500 feet in front of the pilot should be downgraded, as even the keenest eye begins to lose perspective at this distance.

- (1) Since the size of the maneuvering area varies proportionally with the distance from the judges to the model's line of flight, the size of the maneuvers will vary as well. In addition, maneuvers should be proportioned relative to the size of the other maneuvers in the flight.
- (2) The competitor should proportion the maneuver sizes, especially those with loops, squares, or verticals, to the distance out within that broad corridor that he chooses to fly. Large maneuvers placed close in should be downgraded if exceeding the vertical 60 degree limit. Small maneuvers placed far out should be downgraded for appearing to hide the maneuver.
- (3) In all classes, the judge should be careful to judge only the skill with which the maneuver is flown and presented, not the performance of the aircraft.

d. Smoothness and Gracefulness: A most general definition would relate to providing a smooth flowing polished appearance in a constant roll rate from start to finish. A perfect loop cannot be made up of a series of straight flight increments joined by sudden angular jerks. Rotations in the pitch axis of the model should be made evenly and be of sufficient radius to give a smooth appearance in flight. Excessively tight maneuvers should be severely downgraded. All these criteria should be judged to determine the final score for each maneuver.

2. ACCURATE AND CONSISTENT JUDGING: The most important aspect of consistent judging is for each judge to establish his standards and to maintain that standard throughout the contest. It is advisable for the Contest Director or Chief Judge to hold a briefing prior to the start of the contest in order to make the standards as uniform as possible.

3. JUDGING INDIVIDUAL MANEUVERS: The schedules of maneuvers to be performed are described in Section III. Each maneuver is to be scored individually on a basis of 10 to 0 points, in whole or 1/2 point increments, according to the degree of excellence. When in doubt, give the lower score. A 10 should be awarded only if no flaws are seen that would justify a lower score.

a. Section III contains a description of each maneuver and lists a number of reasons for downgrades. The maneuver should be downgraded according to:

- (1) the type of defect
- (2) the severity of the defect
- (3) the number of times any one defect occurs as well as the total number of defects
- (4) the positioning of the maneuver

b. For example, a small single change in heading during the slow roll would be considered one defect, while two or three distinct turns would be considered two or three defects. Note that, for many maneuvers, there are more than six possible kinds of defects and that some of these can be repetitive. It is not possible to downgrade one point for each defect or, indeed, we would have many negative scores. Start positive scoring on the good parts of the maneuver if the score begins to get too low.

4. MANDATORY ZERO: The following is a collation of all mandatory zero (0) scores applicable to all Pattern Classes:

- a.** Flying behind specified flight line during or between maneuvers
- b.** Maneuver performed out of sequence
- c.** Execution of an illegal pass
- d.** Touching the plane before completion of the flight
- e.** Maneuver not completed
- f.** Model ends up on its back when landing
- g.** Failure to take off
- h.** Landing outside of runway or landing zone boundaries
- i.** In spins, a snap roll, model not stalled or 2 or 4 turns are done
- j.** A stall turn “flops”. On a double stall turn, a flop on both stall turns
- k.** Where 3 rolls or loops are required and 2 or 4 are done

Whenever a score of zero (0) is warranted, there should be acknowledgement/agreement between the judges.

5. SUGGESTED DOWNGRADES: Certain types of defects pose difficult judging decisions. The following guidelines are suggested:

a. Stall Turns: A flop would receive a zero for a single stall turn. In the case of maneuvers with two, a flop of either would be downgraded 5 points; if both were flopped, a zero. These downgrades should be applied in addition to downgrades for any other defects observed.

b. Number of Loops, Spins or Axial Rolls: Where 3 loops, rolls or spins are required and 2 or 4 are done, the maneuver will be given a zero (0). Rotation errors of spins should be penalized, for example a 90 degree error would draw a 5 point deduction.

c. Major and Minor Defects: A “minor” error, such as a slight over rotation or heading correction, should be penalized a point for each occurrence. A “major” error, such as no entry or exit line to a maneuver, a stall turn radius exceeding 1-1/2 wingspans, or a total lack of a line segment after a roll where one is required, should earn a two point deduction for that fault alone. Point rolls must hesitate with equal time on each point. One(1) point is subtracted for slight variations, while more severe mis-timing is further downgraded. If one or more points are not visible, or there are more than the required number of points, the maneuver is severely downgraded (five (5) or more points.)

d. Maneuvers Off-Center: Deduct two (2) points for each quarter of the total maneuver’s length that is offset. Examples (assuming no offset with the judges’ permission due to the sun): Loops offset so that the edge of the loop just reaches the judges, deduct four (4) points. For offsets of 1/4 loop, deduct 2 points.

6. DESCRIPTION OF MANEUVERS: All maneuvers consist of a number of basic elements such as lines, loops, rolls, stall turns and spins. A short discussion of these elements precedes the individual maneuver descriptions (Section III) to aid the judges in determining appropriate downgrades for deviations from defined maneuver geometry.

a. Lines: All aerobatic maneuvers are started and ended by a horizontal line.

(1) All lines within a maneuver have a beginning and an end which define their length. The length of a line should only be graded when a maneuver contains several lines with a given relationship, as in a Top Hat. Unequal or misrelated lines should be downgraded according to the severity of the defect.

(2) Whenever a type of roll is placed on a line, the length of the line before and after the roll must be equal.

b. Loops: A loop should have, to be perfect, a constant radius. A loop must start and end with a well defined line which, for a complete loop, should be horizontal. For a partial loop such lines may be in another plane of flight, as required by the maneuver.

(1) Partial loops flown as part of the same maneuver must have identical radii. A slight difference should downgrade the maneuver by one (1) point, while a more severe difference may downgrade it by two (2) or three (3) points.

(2) Excessively tight radii should be downgraded as this violates the requirement for smoothness and gracefulness.

c. Rolls: Rolls may be flown as individual maneuvers or as elements of other maneuvers. The following criteria apply to all rolls:

(1) Roll rate must be constant.

(2) Roll must have a well defined start and stop

- (3) All rolls flown on lines between partial loops must be centered on the line
- (4) Point rolls must hesitate with equal time on each point.

d. Stall Turns: Stall turns consist of lines and partial loops as well as stall turns.

- (1) Lines must have exactly vertical and horizontal flight paths
- (2) Entry and exit must consist of partial loops with equal radii
- (3) Length of the vertical line is not a criterion
- (4) All rolls must be placed in the center of the lines
- (5) Standard pivot radius is one half (1/2) wingspan. A pivot of more than one and one half (1-1/2) wingspan should be considered a defect

e. Spins: All spins begin and are ended by a horizontal line. In order to accomplish a spin, the model must be stalled. The entry should be flown in a horizontal path with the nose high attitude increasing as the speed decreases. The nose then drops as the model stalls. Simultaneously, the wing drops in the direction of the spin. The following criteria apply to spins.

- (1) Snap roll or unstalled entry scores zero
- (2) The stop of rotation is judged. An error of 360 degrees or more scores zero
- (3) A nearly vertical downward line of visible length must be flown after the rotation stops. The pull-out is judged as a partial loop
- (4) The attitude of the model during the spin is not a judging criterion as long as the model is stalled

f. Loop/Roll Combinations: Such combinations are flown in the Immelman Turn, Double Immelman and the Cuban Eights. The following criteria apply:

- (1) During Immelman maneuvers, the rolls should be accomplished immediately after the loop. A visible line in between should be downgraded
- (2) In the Cuban 8s, the 1/2 roll should be placed on the middle of the line. The half rolls should be placed at the same location of crossover point.