

# Senior Pattern Association



## 2021-2022 Competition Guide

### Section I SPA Event Regulations

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# SECTION I – 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 for the years in which each maneuver appeared. No corrections or changes of any sort have been made. All contest functions are subject to the contest director’s discretion.

**GENERAL:** Entrants in SPA contests will be grouped into classes by a combination of age and pattern class. Specified aircraft and engine requirements also apply. Membership in the SPA is required to compete in Sportsman, Advanced and Expert classes. Membership is not required for Novice. However, 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. Pilots flying non-legal SPA airplanes may participate and be judged, but their scores will not be included in the tabulation of final scores.

**AGE GROUPS:** The Novice, Sportsman and Advanced 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 through sixty-four (64) years old — “Regular”.
- 2) SENIOR EXPERT – Sixty-five (65) years old and up — “Senior”.

**PATTERN CLASSES:** Various individual maneuvers and maneuver schedules for each of the pattern events are shown in Section III. The Classes are:

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

**ANY PILOT AGE SIXTY-FIVE (65) and older** may elect, once each year, in which of the various SPA classes he or she will fly. The choice should be guided by competition, not trophy collection.

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**AIRCRAFT:** A listing of known approved aircraft is available on the SPA website both for SPA Pattern and Antique Pattern. Any model which meets SPA requirements 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.

Airplane Building Rules:

- 1) The basic rule is to choose an airplane from the SPA approved list and build the airplane to planform using an approved power source. Power sources are listed elsewhere and subject to change and modification. "Planform" means the outer skin of the airplane is reproduced subject to the exceptions listed below. Examples of planform are: original shape and position of the flying surfaces; original dimensions of fuselage, moments and wingspan; shape of the fuselage and important distinguishing recognizable characteristics of the plane being modeled such as simulated jet intakes and general canopy shape and size. **All approved ARFs are permitted.**
- 2) The use of retractable landing gear is allowed.
- 3) Flaps may be used only if on the original plans.
- 4) Engines may be mounted in any position.
- 5) Landing gear may be tri-gear or tail dragger.
- 6) The hinge line of the rudder may be relocated within the original rudder/vertical fin area, and be made vertical or swept, i.e., as in the Taurus or Thunder Panzer.
- 7) Shaping of the wing tip block may be varied by more or less rounding.
- 8) Internal structure and placement are not restricted; i.e., moving a firewall back to accommodate a four stroke engine, or adding or deleting bulkheads.
- 9) Planes may not be scaled up or down, i.e., making a 40 size plan bigger to use as a .60 size airplane.

**POWER:** Both internal combustion (IC) and electric power are permitted in all classes of SPA, except that **electrics are not allowed in Antique.**

For internal combustion engines, a proper muffler must be used, but not tuned pipes. Pumps may be used, but no air chambers or oversized carburetors are allowed. No propeller larger than 13.5 inches in diameter may be used on any SPA aircraft.

Additional specific requirements by event type for IC engines are:

- 1) Regular SPA Pattern
  - a. Any two-cycle alcohol powered engine up to .65 cubic inches.
  - b. Any four-cycle alcohol powered engine up to .95 cubic inches with no air chamber or supercharging of any kind.
  - c. Any gasoline powered 2-cycle engine up to 15cc/0.91 cu. in.
  - d. Any model aircraft designed and flown before January 1, 1980.
- 2) Antique SPA Pattern
  - a. Any two-cycle engine up to .61 cubic inches.
  - b. Any four-cycle engine up to .72 cubic inches with no air chamber or super charging of any kind.
  - c. Any model aircraft designed and flown before January 1, 1967.
  - d. Electric power is not permitted in Antique classes.
- 3) For electric power, the following rules apply: The intention of these rules concerning battery voltage and wattage is to produce a verifiable system that has capabilities similar to the internal combustion engines permitted in SPA.
- 4) The highest permissible nominal battery voltage is 22.2V. For lithium polymer batteries, this means a maximum of six (6) cells in series (6S) is permitted.

- 5) There is no battery capacity limitation.
- 6) The original manufacturer's label indicating voltage must be attached to the battery and available for inspection.
- 7) A mechanism for disconnecting the battery power from the electronic speed controller (ESC) must be provided on the exterior of the aircraft. That mechanism must be clearly available, easily operated, and have visually clear states. A simple example of the intention of this rule is a plug that is visible and can be manipulated from the outside of the aircraft. **This mechanism is often referred to as an "Arming Device."**
- 8) No electrically-powered braking or reverse torque of the propeller is permitted.
- 9) The maximum power available to the motor is 1400 watts at any time during the flight.
- 10) Electric power is NOT permitted in Antique classes.

## **RADIO:**

- 1) All 72, 53, and 50 MHz 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. All spread spectrum (SS) radio systems operating in the 2.4 GHz band, as approved by the FCC, are permitted.
- 2) Automated stabilization devices are prohibited in accordance with the AMA RC Aerobatic rules for 2013–14, Section 4.4 Equipment Functions. The prohibition includes, but is not limited to, receivers that contain stabilization (e.g., gyroscopes) in one or more of the aircraft axes, snap roll buttons with automatic timers, or any other closed-loop control functions. Pre-programmed, non-timed transmitter functions (mixings) are permitted.

**COMPETITION CLASSES:** Full delineation of classes will be found above ([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 eight 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 class is part of the contest.

**CONTESTANT CLASSIFICATION:** Upon entering their first pattern contest, contestants have the option to enter any one pattern class within the appropriate age group. Contestants who are just learning aerobatics and have no prior pattern competition experience are encouraged to enter Novice. Those who currently compete or have recently competed in other forms of aerobatic competition are encouraged to choose one of the upper classes consistent with their experience.

- 1) For first-time pattern competitors, the SPA has a special set of rules that allow people to enter Novice class with airplanes that meet the engine rules but are not on the approved list. Further, such entrants need not be members of SPA. These two rules allow them to try SPA out without the expenses incurred by purchasing or building a special airframe. However, such "beginners" are not eligible to receive season points, nor will they receive a plaque - they would instead receive a Certificate of Participation. The details of whether they pay an entry fee or a reduced entry fee is, as always, up to the CD. The wording of the Certificate is likewise up to the CD. A contestant may promote himself voluntarily to a higher class at any time.

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- 2) Any contestant who has placed 1st in Novice or Sportsman 3 times must move up to one of the higher classes 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 one of the higher classes no later than the end of the season in which the points were accumulated. Points garnered in the district championship events are excluded. There is no “Move Up” rule in the Advanced class.
- 3) A contestant entering an Antique event, in addition to a Regular event, must fly the same class as his Regular event. For Advanced pilots, the choice may be made between Sportsman and Expert.
- 4) Age groups may be combined for Antique events at the Contest Director’s option.

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

- 1) There is an attempt when:
  - a. The pilot announces the start of the takeoff maneuver.
  - b. The model fails to commence the takeoff maneuver within the three (3) minutes allowed to each competitor.
  - c. 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.
- 2) 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.
- 3) 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.
- 4) 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 (judge) in charge of the flight line.
- 5) In the case of a Midair Collision (midair) between two contestants, SPA has adopted a regulation that furthers our inclusionary perspective on pattern flying. Mid-air collisions that result in the crippling of an aircraft, thereby requiring the pilot to fly an alternate aircraft, have traditionally resulted in the pilot’s loss of the remainder of that round. The round, then, becomes a “throw-away round” due to an incident that is beyond any one’s control.
  - a. When a pilot loses an aircraft due to a midair collision, the pilot(s) involved have the option to finish the round with an alternative aircraft, if available. Thus, if the mid-air occurs during the performance of a maneuver and the pilot opts to resume the round, the flight will resume with the start of the maneuver during which the mid-air occurred. A maneuver is in progress during the time between when the pilot announces the beginning and completion of that maneuver. Should the mid-air happen during the time between maneuvers, the resumed flight will proceed with the next maneuver in the schedule.

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- b. When a pilot loses an aircraft due to a midair collision, the pilot(s) involved have the option to finish the round with an alternative aircraft, if available. Thus, if the mid-air occurs during the performance of a maneuver and the pilot opts to resume the round, the flight will resume with the start of the maneuver during which the mid-air occurred. A maneuver is in progress during the time between when the pilot announces the beginning and completion of that maneuver. Should the mid-air happen during the time between maneuvers, the resumed flight will proceed with the next maneuver in the schedule.
- c. The purpose of this regulation is to permit the pilot, at his/her option, to finish a round that was prematurely terminated through no deliberate action on the part of the pilot(s) involved. The purpose is NOT to permit a pilot an opportunity to re-fly the entirety of a poor round, nor to finish a round after a crash into a fixed object or with terra firma. The rule does NOT apply in the case of a propulsion system failure (e.g., glow plug or battery failure), nor to the failure of part of an airframe not involved in a mid-air (e.g., wings folding during flight). These types of failures are deemed to be the responsibility of the pilot/builder, either during construction or preparation for flight.

**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.

- 1) 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.
- 2) 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 denote mandatory maneuver orientation. The orientation, or direction of flight, shall be determined by the direction of takeoff (U).
- 3) 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.
- 4) If a maneuver other than landing is done out of order, it shall be scored zero (0). Judges may inform the pilot or helper. The pilot 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).
- 5) In all classes, the contestant or his helper must call out the name of the maneuver, as well as the initiation and completion for all maneuvers.
- 6) 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, Horizontal Figure Eight and Traffic Pattern maneuvers.

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

**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. "K" factors are presented on the SPA Call Cards.

- 1) In each class, 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.
- 2) Normalization of flight scores is not required. However, it is a Contest Director's option.
- 3) Annual Points Champions. Each SPA district shall have a separate Annual Points Championship for each class structured as follows:
  - a. Points awarded at the Championship contest shall count one and one half times the normal contest points. The four highest regular season contest point scores will be added to points earned at the Championship contest to determine the champions.
  - b. Points are awarded as follows:
    - 1 point for competing
    - 1 point for each pilot beaten
    - 5 points for 1<sup>st</sup> Place
    - 4 points for 2<sup>nd</sup> Place
    - 3 points for 3<sup>rd</sup> Place
    - 2 points for 4<sup>th</sup> Place
    - 1 point for 5<sup>th</sup> place
  - c. All classes shall be eligible for the Annual Points Championship. This is to encourage points winning pilots to move up to a higher class as soon as the criteria for moving up have been met.
  - d. A competitor need not compete at the year end championship contest to be eligible for the Annual Points Championship.
  - e. Competition Districts:
    - i. The SPA may designate districts based on geographical location. The districts shall be as follows:
      1. East - All states east of the Mississippi River.
      2. West - All states west of the Mississippi River, including the entire states of Louisiana and Minnesota.

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- ii. Points will be awarded to all competitors in the district in which each contest is held, except in designated East-West contests. Points earned in East-West contests will be awarded in both districts. Competitors can accumulate annual championship points in either district, but they are only eligible to win the points championship in their district of residence.
- iii. In the case of a tie in points, co-champions shall be crowned.

**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.)

- 1) At all sanctioned contests, each competitor shall sign an AMA Flight Safety Declaration.
- 2) The Contest Director has the authority to perform safety inspections of any equipment.
- 3) 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.
- 4) Dangerous flying of any sort, or poor sportsmanship of any kind, shall be grounds for disqualification of any contestant.
- 5) The pilot shall remain near the judges while flying. In particular, the pilot shall stay off the runway and/or landing area during maneuvers except for taking off and landing.

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