



Academy of Model Aeronautics

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AMA Competition Regulations Rules Change Proposal Form (electronic)

Please complete this form and click on the SUBMIT button at the bottom of the page. This will send the proposal to the Competition Department at AMA HQ. A copy will then be sent to the appropriate Contest Board Chairman. The current issue of the Competition Regulations must be referenced.

Proposal Number: RCSA19-05

Received Date: 02/21/2018

Revised Date:

Version Number:

Select Proposal Type :

Basic

Select Applicable Competition Regulations this proposal relates to:

RC Scale Aerobatics

Give Brief Summary of the Proposed Change:

Clarifies and simplifies the rule by: – Added language detailing specific visual cues for the judges. – Added definition of “autorotation.” – Removes vague, ambiguous, or unneeded language.

State exact wording proposed for the Competition Regulations. List paragraph number where applicable. Example: Change "quote present rule book wording" to "exact wording required".

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Change current rule wording from:

8.9.3: Family 9.9: Snap Rolls (“Flick Rolls”). Snap rolls may be positive (pitch to the canopy) or negative (pitch to the wheels). Other than this difference, all judging criteria are the same for either type of snap. Snap rolls are difficult to judge due to the speed of the snaps and the variation in the manner in which different aircraft perform snaps. However, two things must be present in order that a judge can decide that a snap roll has occurred. They are: The nose must pitch in the correct direction as indicated by the ARESTI figure (Figures 61 & 62). Autorotation must be initiated.

Given the high energy nature of the snap, it is very difficult to tell if these two items are occurring simultaneously or sequentially. Therefore, there is no requirement that these two movements start simultaneously. They may occur simultaneously or sequentially in the order presented. The requirements and downgrades that apply to snap roll elements are:

- a. The snap must be done in the correct direction, positive or negative. If done in the wrong direction the maneuver is to be zeroed. Judges must watch very carefully for this as, due to the speed of the snap, it is very possible to miss an incorrect direction of the pitch.
- b. There must be departure in the pitch axis in the required direction of the snap. Without some displacement in pitch there can be no high speed stall and therefore, there can be no snap. Aerobatic aircraft with very high rates of roll can occasionally fool a judge and present an aileron roll in place of a true snap. The movement of the aircraft's nose in pitch departing the flight path is a necessary clue to the proper execution of snap rolls. As always, the competitor is given the benefit of the doubt, but if a judge is certain that a proper snap roll has not been executed, a zero (0) is to be given.
- c. Autorotation must be initiated either simultaneously with the pitch departure, or immediately subsequent to it. No downgrade is to be applied if these two motions occur sequentially in the order just stated. Autorotation is difficult to discern but a definite clue is that there will be a yaw component to the rotation. Lacking any visible yaw, the aircraft will be rotating only on its roll axis and not presenting a true snap. As always, the competitor is given the benefit of the doubt, but if a judge is certain that autorotation is not present and therefore that a proper snap roll has not been executed, a zero (0) is to be given.
- d. Any rotation / roll observed prior to the required pitch movement is to be downgraded 0.5 points for each 5 degrees of such rotation.
- e. In the event that the start of autorotation is delayed somewhat after the required pitch movement has been shown, it is possible that the aircraft will draw a visible line between the pitch and the start of autorotation. If this occurs, the maneuver shall be zeroed (0).
- f. Autorotation, once initiated, must be maintained to the prescribed finish point of the snap roll. Coming out of autorotation early and aileroning to the end of the snap is a common error. In this case, a downgrade of 0.5 points for each 5 degrees is to be applied for the amount of rotation remaining at the point the autorotation ends, i.e., for however much the pilot ailerons to the finish. If the autorotation ends with more than 90 degrees of rotation remaining, even if the roll is completed with aileron, the snap roll is to be zeroed.
- g. Alignment during the snap will vary from the prescribed line of flight due to the yaw displacement that is characteristic of a proper snap. This variation may be very small. However, immediately on completion of autorotation, the aircraft must be realigned with the prescribed line of flight. This will put the aircraft on a parallel but offset line or arc from that being flown prior to entry to the snap. If the aircraft exit from the snap is a line or arc that is identical to the entry line this is a clue that a proper snap was not executed. A gain, the offset of the snap exit line or arc from snap entry line or arc may be very small but should be there. No penalty is to be applied for the offset or the realignment of the aircraft immediately after autorotation is completed. Lacking that realignment the extension of the snap exit line will be misaligned and that shall be downgraded at 0.5 for each 5 degrees of misalignment from the prescribed line of flight in pitch, roll and yaw. "Line of flight" as just used here includes arcs.

Exact wording proposed for the rule book.

8.9.3: Family 9.9: Snap Rolls (“Flick Rolls”). Snap rolls may be positive (pitch to the canopy) or negative (pitch to the wheels). All judging criteria are the same for either type of snap. Two essential components of snaps must be observed in order for judges to determine that a snap roll has occurred:

1) Pitch Departure: The aircraft must display a clearly visible change in pitch attitude in the proper direction – towards the canopy in positive snaps; towards the wheels in negative snaps (Fig. 55 & 56).

2) Autorotation: Either immediately following, or simultaneously with the pitch departure, the aircraft must enter autorotation.

Autorotation: State of flight in which the aircraft is rolling while also displaced from straight flight (or radius in loops and part loops) in both the pitch and yaw axes. Autorotation involves an imbalance in lift between left and right wings created by the wing being near, or exceeding, the aircraft’s critical angle of attack while yaw is induced.

Given the high energy nature of the snap, it can be challenging to tell if these two items are occurring simultaneously or sequentially. Therefore, there is no requirement that these two movements start simultaneously. They may occur simultaneously or sequentially in the order presented. The specific requirements and downgrades that apply to snap roll elements are:

a. The snap must be of the type indicated by the Aresti diagram: Positive or Negative. If the snap is of the incorrect type, the maneuver shall be zeroed. Judges must watch very carefully for this as, due to the speed of the snap, it is possible to miss an incorrect direction of the pitch.

b. There must be an observable departure in the pitch axis in the required direction of the snap. The movement of the aircraft’s nose in pitch departing the flight path is a necessary clue to the proper execution of snaprolls. As always, the competitor is given the benefit of the doubt, but if a judge is certain that a proper snap roll has not been executed, the maneuver shall receive a zero (0).

c. Autorotation must be initiated either simultaneously with the pitch departure, or immediately subsequent to it. No downgrade is to be applied if these two motions occur sequentially in the order just stated. Autorotation may be difficult to discern, but there will be a visible yaw displacement to the rotation. Lacking any observable yaw component, the aircraft will be rotating only on its roll axis and not presenting a snap. As always, the pilot receives the benefit of the doubt, but if a judge is certain that autorotation is absent and that a proper snap roll has not been executed, the maneuver shall receive a zero (0).

d. Any rotation / roll observed prior to the required pitch movement is to be downgraded 0.5 points for each 5 degrees of such rotation.

e. In the event that the start of autorotation is delayed somewhat after the required pitch movement has been shown, it is possible that the aircraft will draw a visible line between the pitch and the start of autorotation. If this occurs, the maneuver shall receive a zero (0).

f. Autorotation, once initiated, must be maintained to the prescribed finish point of the snap roll. Exiting autorotation early and completing the snap with ailerons is a common error. In these cases, a downgrade of 0.5 points for each 5 degrees of rotation remaining at the point the autorotation ends shall apply. If the autorotation ends with more than 90 degrees of rotation remaining, the snap roll is to be zeroed.

g. The aircraft's flight path may vary from the prescribed line of flight during the snap due to the pitch and yaw displacement which is characteristic of proper snaps. This variation may be small and difficult to detect. Displacement or the lack thereof, is not a judging criterion. Immediately upon completion of autorotation, the aircraft must be realigned with the prescribed line of flight. This will put the aircraft on a parallel but offset line or arc from that being flown prior to entry to the snap. No penalty is to be applied for the offset or the realignment of the aircraft immediately after autorotation is completed. Lacking that realignment, the aircraft may establish a flight path not parallel to that prior to the snap. Any such misaligned flight path shall be downgraded at 0.5 for each 5 degrees of angular error from the prescribed line of flight in pitch, roll and yaw. Note: "Line of flight" as used here includes loops and part loops where roll elements are present.

**State logic behind proposed change, including alleged shortcoming of the present rule(s).
STATE INTENT FOR FUTURE REFERENCE:**

Logic behind proposed change

Clarifies and simplifies the rule by:

- Added language detailing specific visual cues for the judges.
- Added definition of "autorotation."
- Removes vague, ambiguous, or unneeded language.

If this proposal is for a new event, include all event test data/information here. Please provide information on what testing of this new event has taken place to include number of participants and number of contests.

N/A

State effect, if any, on current AMA records:

NONE

Note: The Contest Board Chairman may, in coordination with the submitter of the proposal, at any time prior to submitting a proposal to the contest board for Final Vote, Edit proposal wording to increase clarity and to avoid ambiguity provided, the proposal intent is not changed.

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