

U.S. POSTAGE
PAID
Wash., D.C.
Permit No. 2374
Non-Profit Org.

OFFICIAL AMA SAFETY CODE

GENERAL

1. I will not fly my model aircraft in competition or in the presence of spectators until it has been proven to be airworthy by having been previously successfully flight tested.
2. I will not fly my model higher than approximately 400 feet within 5 miles of an airport, without permission of the airport operator. I will give right of way to, and avoid flying in the proximity of, full scale aircraft. Where necessary an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full scale aircraft.
3. Where established, I will abide by the safety rules for the flying site I use, and I will not willfully and deliberately fly my models in a careless, reckless, and/or dangerous manner.

RADIO CONTROL

1. I will have completed a successful radio equipment ground range check before the first flight of a new or repaired model.
2. I will not fly my model aircraft in the presence of spectators until I become a qualified flyer, unless assisted by an experienced helper.
3. I will perform my initial turn after takeoff away from the pit, spectator, and parking areas, and I will not thereafter perform maneuvers, flights of any sort, or landing approaches over a pit, spectator, or parking area.

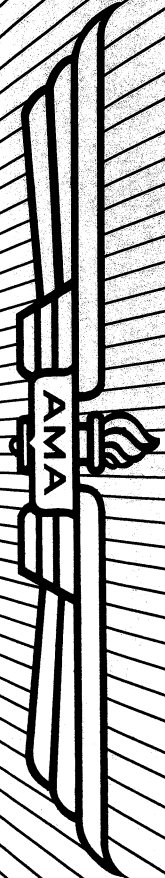
FREE FLIGHT

1. I will not launch my model aircraft unless at least 100 feet downwind of spectators and automobile parking.
2. I will not fly my model unless the launch area is clear of all persons except my mechanic and officials.
3. I will employ the use of an adequate device in flight to extinguish any fuses on the model after it has completed its function.

CONTROL LINE

1. I will subject my complete control line system (including safety thong, where applicable) to an inspection and pull test prior to flying.
2. I will assure that my flying area is safely clear of all utility wires on poles.
3. I will assure that my flying area is safely clear of all non-essential participants and spectators before permitting my engine to be started.

27.145 SHOULD BE RED
27.145 SHOULD BE YELLOW
ERROR, PAGE 39



1973 Official Model Aircraft Regulations



Governing Sporting Model Aviation in America
Issued by the Contest Boards of the

ACADEMY OF MODEL AERONAUTICS

Under the Franchise of

NATIONAL AERONAUTIC ASSOCIATION

and

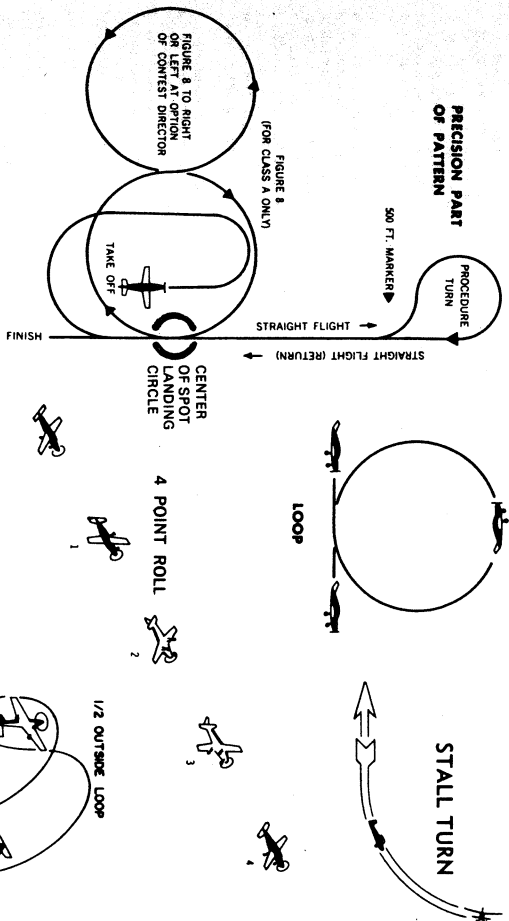
FEDERATION AERONAUTIQUE INTERNATIONALE



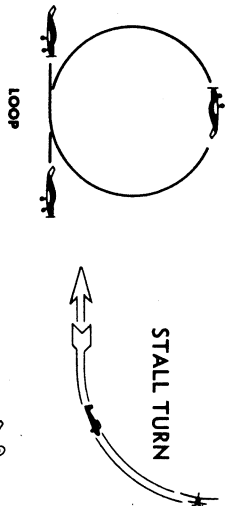
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AMA RC PATTERN MANEUVERS

PRECISION PART OF PATTERN



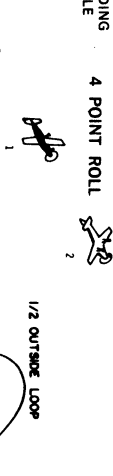
STALL TURN



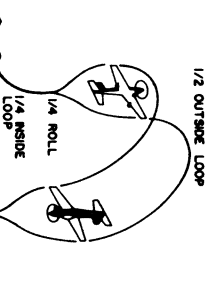
LOOP



4 POINT ROLL



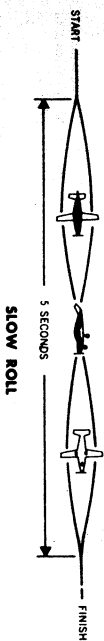
1/2 OUTSIDE LOOP



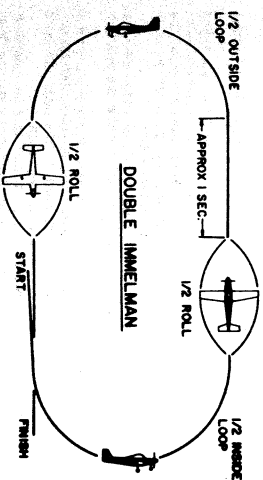
HORIZONTAL ROLL



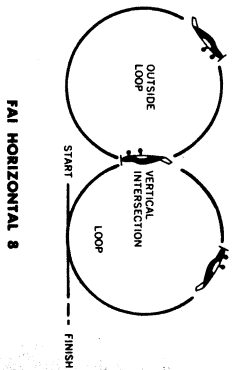
SLOW ROLL



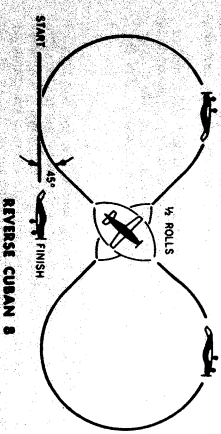
180 DEGREE TURN



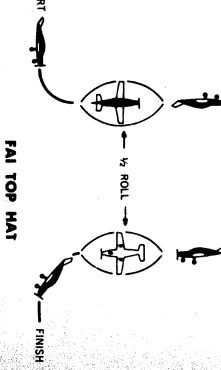
FAI HORIZONTAL 8



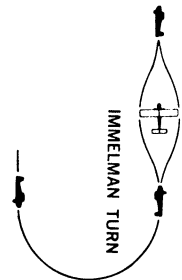
SHORT INVERTED FLIGHT



FAI TOP HAT



Maneuver Drawings Courtesy of Model Airplane News



IMMELMAN TURN

flights have been scored during the normal contest time, the highest single flight score of the contestants concerned shall determine the higher place). There is no minimum number of flights which must be scored.

12.2. Determining the winner in Class D shall be the same as for Classes A, B, and C except the total of the best three flights shall be used. Unless otherwise designated by the CD, ties will be broken by a single flyoff which must take place within an hour of the normal contest finishing time.

13. Flight Pattern. The contestant must fly his entire flight according to the established Flight Pattern for his particular class and in the sequence listed. Maneuvers performed out of order will not be judged.

13.1. Contestant (or his helper) may not touch his plane after it has become airborne until completion of flight; i.e., he may not land plane between maneuvers in order to make adjustments to engine, trim, etc.

13.2. The contestant must call out each maneuver before he attempts to perform it. Call out shall be made just prior to execution. Also, the flyer shall use the straight flight time at the end of each maneuver to announce, "maneuver complete."

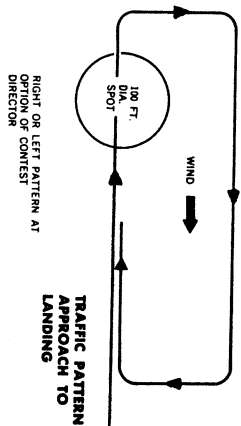
14. Class A Pattern Maneuvers.
1. Takeoff
 2. Straight Flight Out
 3. Procedure Turn
 4. Straight Flight Back
 5. Figure Eight
 6. Three Rolls*
 7. Immelman Turn
 8. Three Inside Loops
 9. Stall Turn
 10. Traffic Pattern Approach
 11. Landing Perfection
 12. Spot Landing

*Rolls may be Axial or Barrel. Judges are to assume Axial if Barrel is not specified by contestant.

15. Class B Pattern Maneuvers.
1. Takeoff
 2. Touch and Go
 3. Three Axial Rolls
 4. Three Inside Loops
 5. Four Point Roll
 6. Three Turns
 7. FAI Horizontal Eight
 8. Cuban Eight
 9. Three Outside Loops
 10. Traffic Pattern Approach
 11. Landing Perfection
 12. Spot Landing

16. Class C Pattern Maneuvers (Novice and Expert).
1. Takeoff
 2. Touch and Go
 3. Three Horizontal Rolls
 4. Three Inside Loops
 5. Four Point Roll
 6. Figure 8
 7. Horizontal Eight
 8. Double Immelman
 9. Three Outside Loops
 10. Reverse Cuban Eight
 11. Slow Roll
 12. 180 Degree Turn
 13. Top Hat
 14. Three Turn Spin
 15. Landing
 16. Spot.

17. Class D Pattern. The Class D Pattern shall be the current FAI Pattern as described elsewhere in this publication.



TRAFFIC PATTERN APPROACH TO LANDING

18. Suggested Field Procedure. The procedures listed below are suggestions to Contest Directors for operation of an RC Pattern event; and may be altered to fit local conditions.

18.1. FAI Contestants shall be set up in "pits" at spot assigned by Event Director, so they will be under his immediate control.

18.2. There will be no testing of transmitters or receivers during the flying period. Transmitters may be impounded at discretion of Event Director. Any person causing interference will suffer moderate disqualification. The Event Director will provide a monitor receiver to check for interference.

18.3. The flight order shall be determined by position of contestants' signatures on a Flight List held by Event Director or his representative. This list shall include all classes and any one time names may be moved to bottom of list on request, but trading of positions with other contestants is not allowed. When a contest is to be continued on a following day, the Flight List shall carry over from day to day.

18.4. Event Director shall carry out following procedure:
18.4.1. Numbers 1, 2 and 3 on Flight List shall be on flight line with their models, equipment, and one helper if desired. No 1 is contestant flying or ready to fly. No 2 is next man to fly. No 3 is release model) from completion of preceding flight in which to start the 3 or 4 minute limit. Failing to start flight within this limit, contestant must immediately remove his plane and equipment to the pits. It shall be responsibility of Event Director or his representative to notify contestant of start and end of 3 or 4 minute period.

18.4.3. Numbers 4, 5, and 6 on the Flight List shall have their planes and equipment in a ready box located near the flight line. As soon as a flight is completed, the No. 4 man becomes No. 3 and shall be requested to move his model and equipment onto the flight line. If he is not on hand to do so, he shall be dropped from the Flight List, and the List advanced to fill his place. The Event Director or his representatives shall be responsible for notifying contestants when they are to move to ready box or flight line.

18.5. When technically possible and when judges and space are available, it is strongly recommended that two or more flights be flown simultaneously, under the following conditions:
18.5.1. Separate takeoff and landing areas sufficiently spaced cross wind from each other to minimize engine noise and flight path interference.

18.5.2. Contestants flying simultaneously shall carefully check receiver and transmitter operation before takeoff, to be sure no interference between them is possible.

18.5.3. Contestants flying simultaneously must be no more than three positions apart on the Flight List. Event Director or representative shall, where possible, select contestants at top of Flight List so that contestants flying on compatible frequencies are on flight line together.

18.5.4. Should a contestant oppose flying simultaneously with someone else, he may cancel his turn and re-sign at the bottom of the Flight List.

18.6. Officials. An Event Director, a Dispatcher-Recorder and Judges are the essential officials for an RC Event. If possible, the Dispatcher-Recorder should have at least two helpers.

18.7. Each flight should be judged by at least two judges, with their scores averaged to give final score for the flight. It is suggested that each maneuver be scored immediately after it is completed, between them. There should be enough judges available to establish a rotational procedure which will average out variations in judging.

19. Description of Maneuvers. A detailed description of each maneuver specified in the above patterns will be found in the AMA RC Pattern Judges Guide, or the FAI RC Aerobatics Rules.

- Model pauses before start of second loop.
- During the second loop:
 - Not on same heading as first loop.
 - Not the same circular path as first loop.
 - Loop deviates left or right.
 - End of loop not at same altitude as entry.

- Model pauses before start of third loop.
- During the third loop:
 - Not on same heading as first loop.
 - Not the same circular path as first loop.
 - Loop deviates left or right.
 - Recovery not at same heading as entry.
 - Recovery not at same altitude as entry.
 - Recovery not level.

Note: Loops must appear rounded and superimposed to the ground-observer even in the presence of the wind.

Stall Turn. The model starts from straight and level flight and noses up to a vertical position, yaws through 180°, then dives along a parallel path and finishes the maneuver with the plane level at the same altitude as the entry. The Stall Turn may be downgraded because:

- Model not level at start.
- Does not become exactly vertical.
- Turns left or right during pull-up.
- Does not yaw tightly through 180°.
- Rearm path more than two wing-spans from entry path.
- Rearm path not parallel to entry path.
- Maneuver not finished at same altitude as entry.
- Plane not level at finish of maneuver.
- Model does not fly straight and level to complete maneuver.

Three Turn Spin. The plane establishes a heading by flying straight and level, pulls up into a stall and commences the spin through one, two, three turns and recovers to level flight on the same heading as the initial flight direction. The judge must watch carefully to be sure this is a spin and not a vertical roll or a spiral dive. In the spin, some part of the plane always intersects an imaginary vertical line along the path of descent. In the spiral dive, the plane circles around, but outside of, the imaginary vertical line. The spin may be downgraded because:

- Initial heading is not level.
- Commencement of first spin is sloppy or uncertain.
- Does not do exactly three turns. Less than two or more than four turns shall be scored zero.
- Does not recover on same heading as initial heading.
- If any of the three turns are spiral dives rather than spins, the score is zero.
- Rate of rotation in spin is excessively rapid.
- Does not finish level.
- Does not fly straight and level for 50 feet.

Four Point Roll. From a straight and level upright flight path, the model is rolled 90 degrees and, at this altitude, with wings in a vertical position, level and heading for it, it is clearly defined. The model is rolled another 90 degrees in the same direction of rotation and holds the inverted attitude long enough for it to be clearly defined. This is followed by another 90 degree roll in the same direction, bringing the ship to another knife edge position. Following a similar pause in the roll, the ship is finally rolled another 90 degrees to upright and level flight. The maneuver may be downgraded for the following reasons:

- Model not level at start of roll.
- The path traced by the model is not a straight line. (The plane does barrel roll segments or suffers changes in heading.)
- Sudden corrections in heading between roll segments.
- The axis of the fuselage veers out at too much of an angle to the flight path.
- Plane changes attitude during roll.
- Plane does not pause long enough between each segment of roll.
- Wings are not exactly vertical at ¼ and ¾ positions.
- Plane fails to do level flight at end of roll.

Reverse Chain Eight. Plane commences in straight and level flight, pulls up into a 45 degree climb, half rolls to inverted and proceeds to inside loop until it is again climbing at a 45 degree angle. Plane then does another half roll to inverted that should cross the flight path of the first half roll, then again proceeds to inside loop until it has reached straight and level flight on the same heading and altitude as the beginning. Maneuver shall be downgraded for the following reasons:

- Entry is not straight and level.
 - First roll not on 45 degree line.
 - Loop not round or deviates to left or right.
 - Second roll not on 45 degree line.
 - Middle of second roll does not cross middle point of first roll.
- Slow Roll.** Model commences from straight and level flight and then rolls slowly at a uniform rate through one complete rotation. The approximate time of the roll to be five seconds. Note: No downgrading for slight overtime. Downgrading shall result for any of the following reasons:
- Model not level at entry.
 - Plane deviates from a straight line during roll.
 - Roll rate not uniform.

- Plane does not roll through exactly one revolution.
- Plane changes heading.
- Roll rate is too rapid resulting in much less than five seconds elapsed during roll.
- Plane is not level at finish of roll.
- Plane fails to do level flight at end of maneuver.

Top Hat. Model starts in straight level flight, pulls up into vertical climb and makes a half roll, then levels out inverted on the same heading as entry. After short inverted flight, model dives vertically, performs a half roll and finally recovers in straight level upright flight on same heading and height as entry. The Top Hat should be downgraded if:

- Model does not start level.
- Model does not go exactly vertical before starting roll.
- Roll does not stop at exactly 180° from entry.
- Model does not climb vertically for a brief period after completing roll.
- Model does not go on an exactly horizontal inverted position after leveling out.
- Model does not fly inverted for the same distance as the vertical climb and roll.
- Model does not dive vertically briefly before starting half roll.
- Second half roll not started at the same altitude as that where the first half roll was completed.
- Second half roll not completed at same altitude as that where first roll started.
- Model does not dive vertically for a brief period after completing second half roll.
- Model deviates left or right of the entry path at any point in the maneuver.
- Model does not recover at same altitude and heading as entry.

PAI Horizontal Eight. The plane commences flying straight and level, pulls up into a steep climb, the model does one full inverted loop starting from straight and level flight. The Horizontal Eight may be downgraded because:

- Entry not level.
- First loop not level.
- Plane deviates left or right during first loop.
- Plane not vertical at start of second loop.
- Second loop not the same diameter as first loop.
- Second loop not round.
- Second loop deviates left or right.
- Does not finish level.
- Does not finish at same heading as entry.
- Does not finish at same altitude as entry.
- Does not finish at same altitude as entry.

Double Immelmann. Model commences in straight and level flight, pulls up into half an inside loop followed by a half roll to upright, outside loop followed by half a roll to upright, recovering in straight and level flight on the same heading and at the same altitude as the entry. Maneuver shall be downgraded for the following reasons:

- Entry not straight and level.
- First half loop not round.
- Model deviates left or right during half loop.
- Half loop not completed exactly above starting point.
- Half roll does not start immediately after half loop.
- Roll is not on a straight line and on 180 degree heading from entry.
- Plane goes immediately into outside loop upon completion of half roll.
- Plane holds straight flight too long before going to outside loop.
- Half outside loop not round or same size as first half loop.
- Model deviates left or right during half loop.
- Half loop not completed exactly below starting point.
- Final half roll does not start immediately after half outside loop.
- Final half roll longer or shorter than first half roll.
- Model does not finish on same heading and at same altitude as entry.
- Plane fails to do straight and level flight at end of maneuver.

Three Outside Loops. The model commences the outside loop flying straight and level, then noses down into three heading and recovers flying straight and level on the same heading and altitude as the entry. The outside loops are downgraded in the same manner as the inside loops.

180 Degree Turn. The plane starts in straight and level flight, pulls up into a vertical climb, rolls 90 degrees, performs half of an outside loop, rolls 90 degrees in the opposite direction to the first quarter roll, and pulls out at the same altitude but with the 180 degree heading change. The maneuver may be downgraded for the following reasons:

- Entry is not straight and level.
- Pull up is not to exact vertical climb.
- Roll is more or less than 90 degrees.
- Path of roll is not straight vertical line.
- Half outside loop deviates left or right.

- Half loop is not smooth and round.
- Second 90 degree roll with is not straight vertical line.
- Pull out to level flight is sudden or jerky.
- Pull out is not to same altitude and 180 degrees opposite heading to entry.
- Plane fails to perform straight and level flight at end of maneuver.

Figure M. The model starts in straight and level flight, pulls up to a vertical attitude, performs a stall turn (left or right) through 180°, then makes ¼ an inverted loop pulling up again to vertical flight. It performs a second stall turn in a direction opposite to the first stall turn and then recovers on the same altitude and heading as the entry. When viewed from the side, the model creates the letter "M". First and second stall turns are to be opposite as seen from the ground. (The airplane itself actually turns in the same direction both times.) If both turns are in the same direction, as seen from the ground, the score is zero. The maneuver shall be down-graded for the following reasons:

- Model not level at start.
- Does not become vertical.
- Turns left or right during pull up.
- Turn radius at top of stalls is larger than two wing-spans.
- Turns at top of stalls are less than 180°.
- Diving paths are not parallel to climbing paths.
- Bottom of inverted portion is at different altitude than entry.
- Turning point of second stall turn is at different altitude from the first turn.
- Maneuver not finished at same altitude as entry.
- Plane not level at finish of maneuver.

Traffic Pattern Approach. The rectangular approach is commenced with the model flying into the wind over the center of the runway and landing circle, a turn of 90°, a cross-wind leg, a second turn of 90°, a down-wind leg, a third turn of 90°, a cross-wind leg, a fourth turn of 90° and straight flight toward the point of touchdown. This maneuver is finished just prior to the point of touchdown (six-foot altitude). It is recommended that the descent start at the beginning of the downwind leg. However, wind or airframe conditions may dictate otherwise. Downwind should be entered at a 45 degree angle to the runway and consistency, not on where the score will start.

Note: The contest director shall determine whether the turns should be left or right. The rectangular approach may be downgraded because:

- Legs of rectangle are not straight and perpendicular to each other.
- The 90° turns are not smooth, precise, or sharp.
- Gallops in pitch, yaw or roll during the approach.

RC FREQUENCIES AND FLAGS

The AMA has designated certain colors to be used in the form of a streamer or pennant (flag) as a means of indicating what frequency a transmitter is assigned. It is recommended that 141 MHz flags be triangular. Transmitter antennas in the 50-54 MHz and 72-76 MHz bands will show two flags, each in the form of a ribbon approximately 1" x 16", one ribbon indicates the exact frequency, the other ribbon indicates the exact frequency. The four frequencies indicated by asterisks (*) in the 72-76 MHz band are for model aircraft use only.

27 MHz Band

28 995—Brown	27 095—Orange	27 195—Green
27 045—Yellow	27 145—Red	27 255—Blue

50-54 MHz Super-Het

53 10—Black & Brown Ribbons	53 30—Black & Orange Ribbons
53 20—Black & Red Ribbons	53 40—Black & Yellow Ribbons
53 50—Black & Green Ribbons	

50-54 MHz Super-Regen

51 20—Black & Light Blue	52 04—Black & Violet Ribbons
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72-76 MHz Band

72 06*—White & Brown Ribbons	72 32—White & Violet Ribbons
72 16—White & Blue Ribbons	72 40*—White & Orange Ribbons
72 24—White & Red Ribbons	72 38—White & Yellow Ribbons
75 64*—White & Green Ribbons	

- Attempts to break out of pattern to go around again. Zero points.
- Model climbs during approach.
- Note: Since the Traffic Pattern Approach is not required in Class C, the Landing Perfection maneuver must be called out following completion of the Three Turn Spin. When the contestant has his plane lined up and on heading for the final approach, and has less than five (5) feet off the ground, he must announce the start of the Landing maneuver. From this point on, the Landing will be judged.

Landing Perfection. At the conclusion of the final approach leg, the model continues to descend at a gradual rate and lands on the heading used in the final approach. After landing, the model must roll in a straight line and come to a complete stop. The landing should be downgraded if:

- Approach during landing is too steep.
- Gallops in pitch, yaw or roll during approach.
- Model impedes or thuds onto ground due to lack of flare-out.
- Model bounces on landing.
- Model turns left or right while rolling to a stop. Turns necessary to avoid running off the runway may be excused if wind direction and spot location are adverse. However, this should not be employed in cases where the flyer accidentally lands near the edge of the runway outside the spot.
- Model fails to make pronounced stop.
- Model rolls too far away to accurately judge.
- Model pitches over and makes ground contact with nose or wingtip.
- If model flips over on its back or cartwheels on wings—0 points.
- For a retract gear airplane, any gear-up landing shall be scored zero.
- Failure of retract gear during landing and before plane completely stops shall result in zero landing score.

Spot Landing. Landing within the 100 foot circle results in automatic awarding of the same number of points obtained in landing perfection. All judges should show agreement on their score. (Not on the amount of score, just whether or not a spot landing was accomplished) and in the event of disagreement, a majority vote by the judges should dictate.

Conclusion of Flight. The official flight is finished at the moment the plane stops at the end of its landing roll. At this point the contestant announces "flight complete" and immediately exits his plane off the runway to whatever area the Contest Director designates. If landing was deadstick, pilot or helper shall retrieve plane as soon as permitted by official in charge of flight line.

FAI RC AEROBATICS (CLASS D AMA RC AEROBATICS)

b) If, before 50 laps of an eliminating race or semi-final have been flown, only one team remains in the running and flying alone, the race will be declared void and considered as an attempt for the remaining team.

c) A team which has been granted an attempt is allowed to participate in another race.

9. **Definition of an Official Flight.** Every participation in a race, not considered as an attempt, or which has not been subjected to disqualification is an official flight.

10. Team Qualification and Classification.

a) Each competing team must take part in at least one eliminating race to qualify for the semi-finals, but it may participate in two.

b) The nine teams which register the nine best times during the eliminating races will qualify for the semi-finals. In case of a tie, the second heat results will decide the semi-final teams. If a further tie occurs, another heat will be run to decide the semi-final teams.

c) When more than three teams enter the eliminating races, new eliminating races will take place, opposing the teams two to two or three; the unit one of those teams is qualified. In that case, departure will be made by an individual draw, will only be enforced if more than two teams qualify in the first round.

d) This system for the elimination of the nine selected teams for the semi-finals may be modified by the organizing committee.

e) In case of a tie among the semi-finalists during the semi-finals, the regulations (b), (c) and (d) will be applied, the number nine being reduced to three.

f) The competing teams which have participated in the final race will be placed at the head of the classification, only taking into account the times of flights during the final, after re-checking tank capacity and the general characteristics of the models. Other team classifications will be made according to the time registered during the eliminating races.

11. **International Team Classification.** International classification is established by adding the best results achieved during the eliminating races by each of the three teams of each nation.

12. Jury and Timekeepers.

a) The organizers must appoint a panel of at least three F.A.I. judges, who shall for W/C/h and other limited International competitions be of different nationalities and have at least one language in common. They will be selected from a list of persons approved by National Aeroclubs for their proficiency and will form the jury.

b) Two timekeepers, equipped with stop-watches registering at least 1/10th second, with a time limit of minimum of 15 minutes will be allocated to each team.

c) These two timekeepers will be assisted by two lap-counters charged with registering the number of laps flown by the team that they control and also to warn the timekeepers at exactly which time the model has finished the number of laps required in that heat.

d) The time retained is the average of the registered time, made up to the next upper 1/10 second.

CONVERSION FACTORS

LENGTH	By	To Obtain
centimeters	0.3937	inches
centimeters	0.01	meters
decimeters	0.1	meters
feet	0.3048	meters
inches	25.40	millimeters
kilometers	3281	feet
kilometers	1000	meters
kilometers	0.6214	miles
kilometers	0.53996	nautical miles
meters	3.281	feet
meters	39.37	inches
miles	5280	feet
miles	1609	meters
miles	0.86898	nautical miles

AREA

Multiply	By	To Obtain
square centimeters	0.001076	square feet
square centimeters	0.1550	square inches
square feet	929.0	square centimeters
square feet	144	square inches
square feet	0.09290	square meters
square inches	6.452	square centimeters
square inches	0.006944	square feet
square inches	6.452/10 ⁴	square meters
square inches	645.2	square millimeters
square meters	10.76	square feet
square meters	1.196	square yards
square millimeters	0.00155	square inches
square yards	9	square feet
square yards	1396	square inches

13. Duties of the Jury.

a) The team-race jury is responsible for observing the conduct of each team during a heat. Teams will be informed of any offense by visual indicators. After a maximum of three offenses a team will be eliminated from a heat.

b) Warning and cancellation are notified to each team by means of three colored lights: Green light, first warning (first offense); Amber light, second warning (renewal of the first offense or a new one); Red light, elimination (renewal of previous offense or a new one).

14. Warnings—Eliminations.

At each warning the chief judge shall notify the team manager concerned so that, in turn, he may convey the reason of the warning to the mechanic. In the event of any serious breach of the rules, the jury may eliminate the team from the race.

A TEAM SHALL BE WARNED:

- If a pilot interferes with or obstructs another pilot either by his conduct in the circle or by a maneuver of his model preventing another model from flying or landing normally.
- If a pilot, instead of walking around in the center, stands in the same place or walks backwards.
- If a pilot does not have the controlling hand in contact with the middle of his chest (except when oversteering, starting and landing, when an exception of two laps is allowed).
- If a pilot applies physical effort to increase the speed of his model during the official flight.
- If the height level of the flight prescribed by the rules is exceeded.
- If, during the start of the race or during the pit stops, the control handle, the lines and the model are not on the ground and/or the center line of the model is inside the flight circle.
- If, after releasing, the mechanic starts the model ahead of the line which marks its starting position.
- For any other flagrant breach of the rules.

A TEAM SHALL BE ELIMINATED FROM A HEAT:

- If the pilot stops outside the 3 m (9'10") circle before the mechanic has taken hold of the handling model.
- If the mechanic steps into the flight circle with both feet.
- If the mechanic retrieves his model by any device.
- If oversteering is done by passing under the slower model.
- If the pilot whose model is to be overtake carries out any maneuver to impede the overtaking competitor.
- If a member of the team or the model causes a collision.
- If jetisoning occurs or if the model is not in the condition as stated in 4 (a) to (f).
- If the model flies more than two laps with the engine stopped.
- If the model is recovered with the engine running or prior to touchdown with the engine stopped.
- If, after its model has been processed, the competing team has used parts or elements not checked during the control; if the team has modified its model(s) by changing the characteristics or specifications imposed by the rules this may lead to the application of penalties as stated in chapter 5 of the Sporting Code, Section 1.

FAI RC AEROBATICS (CLASS D AMA RC AEROBATICS)

Rules 1 through 12 and the FAI General Rules do not necessarily apply when FAI Pattern is flown as a Class D event in AMA contests—they are basically world championship rules. They may, however, be used if it is established that the event is in accordance with these FAI regulations rather than the AMA Pattern rules. For other AMA Class D or FAI events, the FAI schedule of maneuvers shall be used (13 through 13.15).

1. Definition of a Radio-Controlled Aerobatic Power Model.

Model airplanes in which lift is generated by aerodynamic forces acting on surfaces and which perform maneuvers controlled by the pilot on the ground using radio control connection.

2. Prefabrication of the Model. Permitted:

a) Assembly by the builder from pre-fabricated parts and in which the builder inspects the equipment and requires models which are completely prefabricated and require only few minutes of unskilled effort for their completion or complete ready-to-fly models which have been built by a person other than the pilot.

3. General Characteristics of Radio-Controlled Aerobatic Power Models.

Maximum surface area: 150 dm² (2325 sq. in.). Maximum total weight: 5 kg (11.023 lbs.). Main wing loading: 12 g/dm² (395 oz. per sq. ft.). Maximum loading: 75 g/dm² (2431 oz. per sq. ft.). Maximum total swept volume of the engine(s): 10 cm³ (61 cc.). The engine(s) must be fitted with effective silencers.

4. Number of Helpers. Each pilot is permitted one helper during the competition.

5. Number of Flights. The competitor has the right to three official flights.

6. Definition of an Attempt. There is an attempt when:

- The pilot announces the start of the take-off maneuver.
- The model fails to commence the take-off maneuver within the 3 minutes allowed to the competitor.
- If the engine stops after the pilot has announced the start of take-off and before the model is airborne, it may be restarted (within the 3-minute period). However, no points will be awarded for the subsequent take-off maneuver.

7. Number of Attempts. Each competitor is entitled to one attempt for each official flight.

N.B. An attempt can be repeated at the judges' discretion only when, for any unforeseen reason outside the control of the competitor or organizers, the model fails to make a start.

8. Definition of an Official Flight. There is an official flight when an attempt is made whatever the result. Note: When jetisoning occurs the flight is cancelled.

9. Marking. Each maneuver may be awarded marks between 0 and 10.

By each of the judges during the flight. These marks are multiplied by a coefficient which varies with the difficulty of the maneuver. Any maneuver not completed shall be scored zero. The allow them to be seen clearly by the judges. The non-observance of this rule will be penalized by loss of points. There shall be an official at each circle to indicate by a visual and audible signal, if before a maneuver is completed, no points shall be given for this maneuver. The official must keep a record of all disqualified infringements has been made, the scores will be deleted on all cards.

10. Classification. The final classification will be determined by the aggregate sum of three flights. The marks allocated by the judges will be multiplied by their appropriate coefficient, and added together. In case of a tie for the first place, the final result will be established by fly-off. Any fly-off must take place within one hour of the normal finishing time of the contest. No attempts are permitted. The results of a fly-off shall count only for the establishment of a title (such as World Champion) and any prizes awarded.

11. Judging (for World Championships).

a) The organizers must appoint a panel of at least 3 judges for each flight. The judges shall preferably be of different nationalities and be elected from a list of persons who are approved by the National Aero Clubs and the CIAM. A rotation system or equivalent system may be used provided that each judge will score a constant an equal number of times. The specific system to be employed at a World Championship must be stated in advance by the organizers and must have prior approval by the CIAM or FAI Bureau.

b) There shall be training flights for judges with a briefing before and after to be held immediately before every W/C.

12. Organization for Radio-Controlled Aerobatic Contests. All

transmitters to be used during the contest must be checked and placed in a compound kept under observation. During the contest, a

Seward must be in control of the transmitter compound and will

issue the transmitter to the competitor only when his name is called for him to stand by to make his flight. As soon as the attempt has ended the competitor must immediately return his transmitter to the Seward at the transmitter compound.

All unauthorized transmitter during the contest will result in automatic disqualification of the offender from the entire contest, and render him liable to further penalties.

During the time the flight maneuvers are being carried out, the pilot using his transmitter must stay in the proximity of the 30 meter (98.17) landing circle and under direct supervision of the course steward.

The order of starting of the various countries and the

competitors must be established by means of a draw before the start of the contest.

Competitors must be called at least 5 minutes before they are required to occupy the starting area.

The organizer must provide a radio monitor for the purpose of detecting possible interference.

13. Schedule of Maneuvers for Radio-Controlled Aerobatic Power Models.

The maneuvers must be executed during an uninterrupted flight in the order in which they are listed and the competitor must indicate in writing, before the start of the flight, any maneuver he will not execute.

The name and start of each maneuver must be announced by the pilot or his assistant. Unannounced maneuvers will not be scored. It is recommended that the end of each maneuver also be announced. The landing maneuver need not be announced but must be executed in an uninterrupted manner.

The competitor may make only one attempt to execute each figure during any one flight.

The pilot has ten minutes in which to start his engine and complete the program of maneuvers.

One engine must be running during execution of the maneuvers 13.1 to 13.15.

13.1 Take-off. The model must stand still on the ground with the

engine running without being held by the pilot or mechanic, and must then take off into wind. The taxi-run should be straight and the model should lift gently from the ground and climb at a steady angle. The take-off is completed when the model is turned out of the take-off path. The take-off should be down-graded at least one point for each of the following reasons:

- Model does not stand still when released.
- Change in heading during the run.
- Jumping from the ground.
- Swinging on the ground.
- Retrieving the ground after becoming airborne.
- Too steep a climb angle.
- Changes in elevation during climb.
- Changes in heading during climb.
- Dropping a wing tip.

13.2 Figure M. The model starts in straight and level flight, pulls

up to a vertical attitude, performs a stall turn (left or right) through 180 degrees then makes half an inverted loop pulling up again to the first stall turn and then recovers on the same attitude and heading as the entry. When viewed from the side, the model creates the letter 'M'. The maneuver should be down-graded for the following reasons:

- Model not level at start.
- Turn not become vertical.
- Turns left/right during pull-up.
- Turn radius at top of stalls is larger than two wing spans.
- Turns at top of stall are less than 180 degrees.
- Diving paths are not parallel to climbing paths.
- Bottom of inverted position is at different altitude than entry.
- Turning point of second stall turn is at different altitude from the first turn.
- Maneuver not finished at same attitude as entry.
- Model not level at finish of maneuver.
- Model slides tail first.
- If second stall turn is in the wrong direction, score zero.

13.3 Double Immelman. Model starts in level flight, pulls up into a

half loop, followed by half a roll, flies straight and level for approximately one second, then makes half an outside loop followed by half a roll, recovering in straight and level flight. The maneuver should be down-graded for any of the following reasons:

- Model not level at start.
- Model deviates left or right during half-loop.
- Half-loop not completed exactly above point of commencement of half-loop.
- Half-roll does not commence immediately after half-loop.
- Plane deviates from a straight line during roll.
- Model flies longer than one second upright before commencing half outside loop.
- Model deviates left or right during half outside loop.
- Half outside loop not completed at same attitude as entry.
- Half outside loop not completed at exactly below point

K-15

13.4 Double Immelman. Model starts in level flight, pulls up into a half loop, followed by half a roll, flies straight and level for approximately one second, then makes half an outside loop followed by half a roll, recovering in straight and level flight. The maneuver should be down-graded for any of the following reasons:

- Model not level at start.
- Model deviates left or right during half-loop.
- Half-loop not completed exactly above point of commencement of half-loop.
- Half-roll does not commence immediately after half-loop.
- Plane deviates from a straight line during roll.
- Model flies longer than one second upright before commencing half outside loop.
- Model deviates left or right during half outside loop.
- Half outside loop not completed at same attitude as entry.
- Half outside loop not completed at exactly below point

K-15

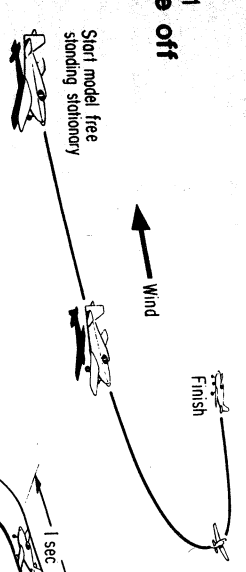
13.5 Double Immelman. Model starts in level flight, pulls up into a half loop, followed by half a roll, flies straight and level for approximately one second, then makes half an outside loop followed by half a roll, recovering in straight and level flight. The maneuver should be down-graded for any of the following reasons:

- Model not level at start.
- Model deviates left or right during half-loop.
- Half-loop not completed exactly above point of commencement of half-loop.
- Half-roll does not commence immediately after half-loop.
- Plane deviates from a straight line during roll.
- Model flies longer than one second upright before commencing half outside loop.
- Model deviates left or right during half outside loop.
- Half outside loop not completed at same attitude as entry.
- Half outside loop not completed at exactly below point

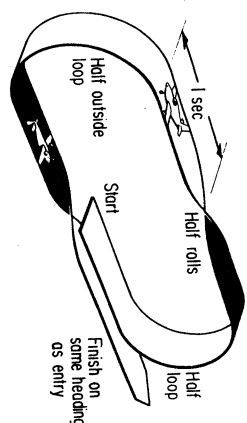
F.A.I. Radio Control Maneuvers



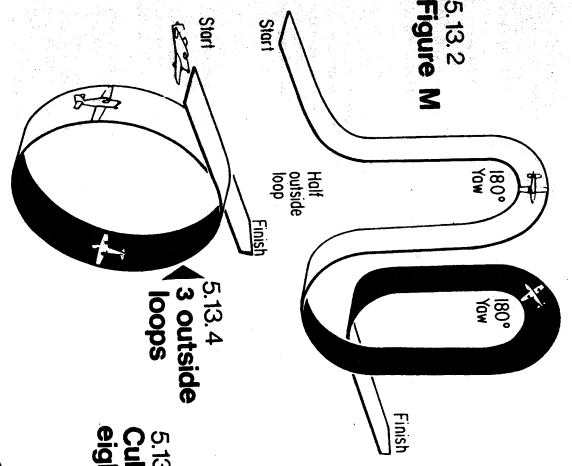
5.13.1
Take off



5.13.3
Double Immelman

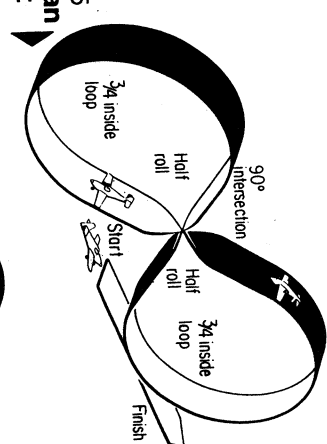


5.13.2
Figure M

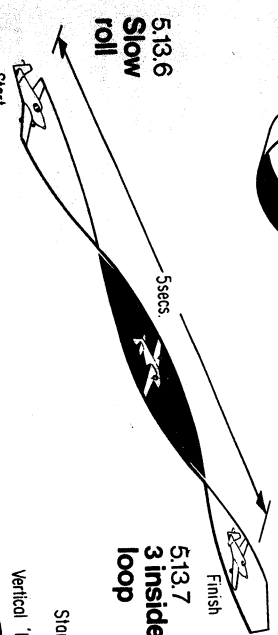


5.13.4
3 outside loops

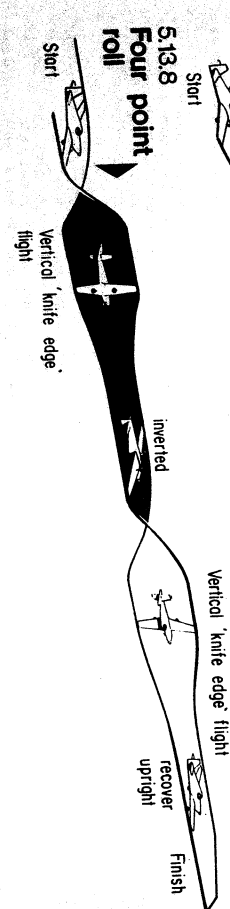
5.13.5
Cuban eight



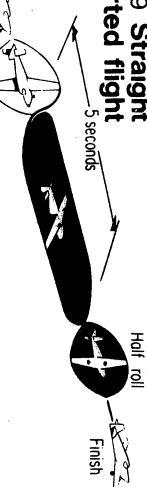
5.13.6
Slow roll



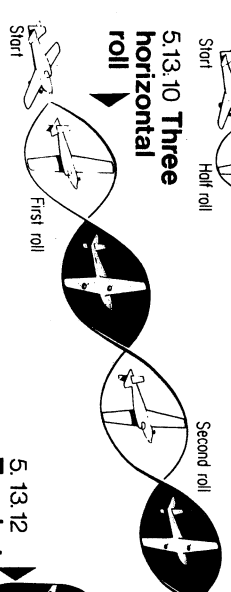
5.13.8
Four point roll



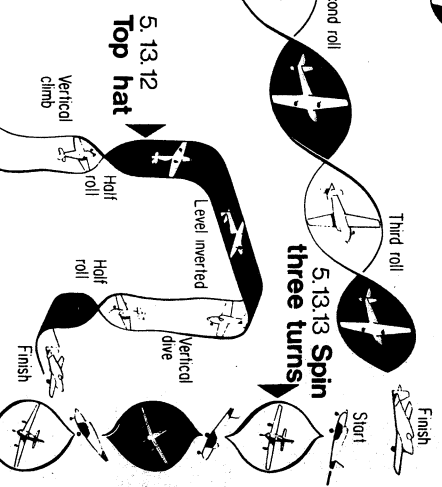
5.13.9
Straight inverted flight



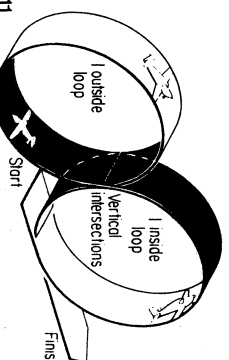
5.13.10
Three horizontal roll



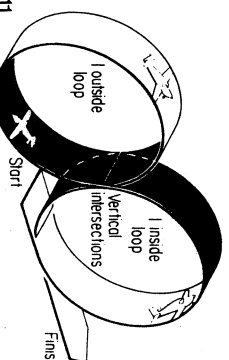
5.13.13
Spin three turns



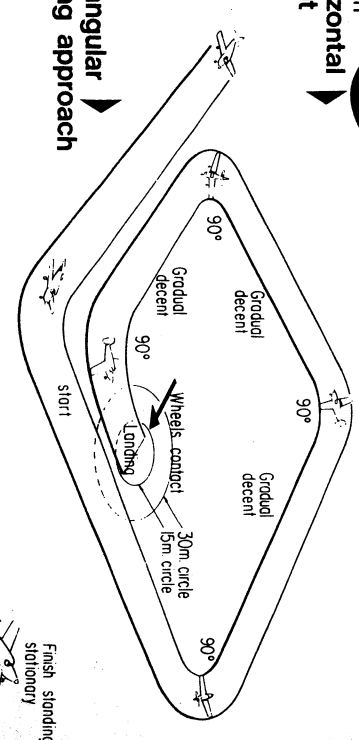
5.13.12
Top hat



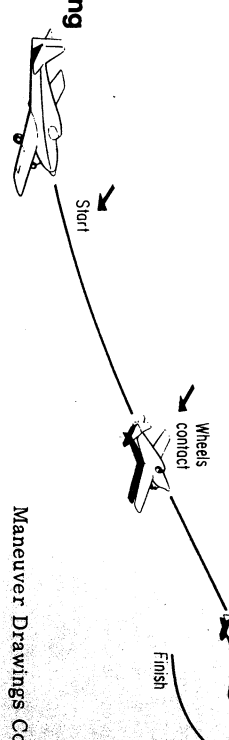
5.13.11
Horizontal eight



5.13.14
Rectangular landing approach



5.13.15
Landing



Maneuver Drawings Courtesy of
RADIO CONTROL MODELS & ELECTRONICS

- 10. Model does not commence half-roll immediately at bottom of half-loop.
- 11. Model travels farther during second half roll than it did in first half-roll.
- 12. Model does not finish in level flight.
- 13. Model does not finish on same heading and altitude as entry.

K=10

of commencement.

The maneuver shall be 5 seconds.

The maneuver will be down-graded for the following reasons:

1. Not level during entry.
2. Rolls more or less than 90 degrees and does not hesitate with wings vertical.
3. Does not provide ample headroom.
4. Wings not horizontal at end of second quarter of rolls.
5. Repeat 2, 3 and 4 above for remaining third and fourth quarter rolls.

- 1. Entry not level.
- 2. Loop not round.
- 3. Loop deviates left or right.
- 4. Finish of loop not at same altitude as entry.
- 5. Recovery not on same heading as entry.
- 6. Recovery not on same heading as first loop.
- 7. Not the same diameter as first loop.
- 8. Loop deviates left or right.
- 9. Finish of loop not at same altitude as entry.
- 10. The third loop may be down-graded because:

K=10

13.10. Rolls. Model commences from straight and level flight then rolls at a uniform rate through three complete rotations and finishes in straight flight, all on the original heading; the time of the three rolls to be approximately five seconds. Down-grading shall result from any of the following reasons:

1. Model not level at entry.
2. Model deviates from straight line during rolls.
3. Roll rate not uniform through exactly three revolutions.
4. Model deviates altitude during rolls.
5. Model changes heading during rolls.
6. Model rate is extremely rapid so that rolls are completed in less than three-seconds.
7. Model is not level at the finish of the rolls.

- 1. Not level at entry.
- 2. Model deviates left or right.
- 3. Model deviates altitude or heading.
- 4. Model flies inverted for less than the seconds.

K=10

13.11. Horizontal Eight. The plane commences flying straight and level, pulls up into the quarter of an inside loop, does one full inverted loop starting in straight and level flight. The Horizontal Eight may be down-graded because:

1. Entry not level.
2. Plane deviates left or right during first loop.
3. Plane not vertical at start of second loop.
4. Plane not vertical at same diameter as first loop.
5. Second loop not the same diameter as first loop.
6. Second loop deviates left or right.
7. Does not finish level.
8. Does not finish on same heading as entry.
9. Does not finish at same altitude as entry.
10. Does not finish at same altitude as entry.

- 1. Entry not level.
- 2. Loop not round.
- 3. Loop deviates left or right.
- 4. Roll not 45 degree line.
- 5. Second loop not same diameter as first loop.
- 6. Second loop deviates left or right.
- 7. Second loop not at same altitude as first loop.
- 8. Second loop not on 45 degree line.
- 9. Does not finish level.
- 10. Does not finish on same heading as entry.
- 11. Does not finish at same altitude as entry.

K=10

13.12. Top Hat. Model starts in straight and level flight, pulls up into vertical climb and makes a half roll, then levels out inverted on the same heading as entry. After a short inverted flight, model dives vertically, performs a half roll and finally recovers in straight level upright flight on the same heading and height as entry. The Top Hat should be down-graded if:

1. Model does not start level.
2. Model does not go vertical before starting roll.
3. Roll does not stop at exactly 180 degrees from entry.
4. Model does not climb vertically for a brief period after completing roll.
5. Model does not go to an exactly horizontal inverted position after the quarter loop.
6. Model does not fly inverted for the same distance as the vertical climb and roll.
7. Model does not dive vertically briefly before starting half roll.
8. Second half roll not started at the same altitude as that where the first half roll was completed.
9. Second half roll not completed at same altitude as that where first roll started.
10. Model does not dive vertically for a brief period after completing second half roll.
11. Model deviates left or right of the entry path at any point in the maneuver.
12. Model does not recover at same altitude and heading as entry.

- 1. Not on same diameter as first loop.
- 2. Loop deviates left or right.
- 3. Loop deviates altitude as entry.
- 4. Finish of loop not at same altitude as entry.
- 5. Recovery not on same heading as first loop.
- 6. Recovery not on same heading as entry.
- 7. Not the same diameter as first loop.
- 8. Loop deviates left or right.
- 9. Recovery not on same heading as entry.
- 10. Recovery not on same heading as first loop.
- 11. Not the same diameter as first loop.
- 12. Loop deviates left or right.
- 13. Loop deviates altitude during rolls.
- 14. Model changes heading during rolls.
- 15. Model rate is extremely rapid so that rolls are completed in less than three-seconds.
- 16. Model is not level at the finish of the rolls.

K=15

13.13. Spin—Three Turns. The model establishes a heading direction by flying straight and level, pulls up into a stall and commences the spin through one, two, three turns and recovers to level flight on the same heading as the initial flight direction. The judge must watch carefully to be sure this is a spin and not a vertical roll or a spiral dive. The Spin may be down-graded because:

1. Initial heading is not level.
2. Commencement of first spin is sloppy or uncertain.
3. Does not do exactly three turns. Less than two or more than four turns should be scored zero.
4. Does not finish on same heading as initial heading.
5. Does not finish level.
6. If any of the three turns are spiral dives rather than spins the score is zero.

- 1. Not on same diameter as first loop.
- 2. Loop deviates left or right.
- 3. Loop deviates altitude during rolls.
- 4. Model changes heading during rolls.
- 5. Model rate is too rapid resulting in much less than five seconds.
- 6. Model is not level at finish of roll.

K=15

13.14. Inverted Loops. The model starts the Loops maneuver flying straight and level, then pulls up into a smooth, round loop, followed by a second and third loop in exactly the same path with a straight and level recovery to finish. The first loop may be down-graded because:

1. Entry not level.
2. Loop deviated left or right.
3. Loop deviated left or right.
4. Finish of loop not at same altitude as entry.
5. Loops displayed endwise rather than with a view of the circular path.
6. The second loop may be down-graded because:

- 1. Not on same diameter as first loop.
- 2. Loop deviates left or right.
- 3. Loop deviates altitude as entry.
- 4. Finish of loop not at same altitude as entry.
- 5. Recovery not on same heading as first loop.
- 6. Recovery not on same heading as entry.
- 7. Not the same diameter as first loop.
- 8. Loop deviates left or right.
- 9. Recovery not on same heading as entry.
- 10. Recovery not on same heading as first loop.
- 11. Not the same diameter as first loop.
- 12. Loop deviates left or right.
- 13. Loop deviates altitude during rolls.
- 14. Model changes heading during rolls.
- 15. Model rate is too rapid resulting in much less than five seconds.
- 16. Model is not level at finish of roll.

K=15

13.15. Landing. The model flies smoothly to touch the ground with no bouncing nor change in heading above the landing circle. A left turn of 90 degrees, a crosswind (eg. a second left turn of 90 degrees), a down-wing leg, a third left turn of 90 degrees, a fourth left turn of 90 degrees and straight flight towards the point of touch down. Note: The contest manager is permitted to change the left turns if he wishes. The Rectangular approach may be down-graded because:

1. Legs of rectangle are not straight.
2. The 90 degree turns are not smooth or precise.
3. Gallups in elevation.
4. Attempts to break out of pattern or go around again—zero points.

- 1. Not on same diameter as first loop.
- 2. Loop deviates left or right.
- 3. Loop deviates altitude as entry.
- 4. Finish of loop not at same altitude as entry.
- 5. Recovery not on same heading as first loop.
- 6. Recovery not on same heading as entry.
- 7. Not the same diameter as first loop.
- 8. Loop deviates left or right.
- 9. Recovery not on same heading as entry.
- 10. Recovery not on same heading as first loop.
- 11. Not the same diameter as first loop.
- 12. Loop deviates left or right.
- 13. Loop deviates altitude during rolls.
- 14. Model changes heading during rolls.
- 15. Model rate is too rapid resulting in much less than five seconds.
- 16. Model is not level at finish of roll.

K=10

13.16. Four Point Roll. The model starts in straight and level flight, does one quarter of a horizontal roll till wings are vertical, then hesitates. It then continues with a second quarter roll to inverted, hesitates, does another quarter roll, hesitates and finally does a quarter roll to upright and level flight at same altitude and heading as entry.

- 1. Not on same diameter as first loop.
- 2. Loop deviates left or right.
- 3. Loop deviates altitude as entry.
- 4. Finish of loop not at same altitude as entry.
- 5. Recovery not on same heading as first loop.
- 6. Recovery not on same heading as entry.
- 7. Not the same diameter as first loop.
- 8. Loop deviates left or right.
- 9. Recovery not on same heading as entry.
- 10. Recovery not on same heading as first loop.
- 11. Not the same diameter as first loop.
- 12. Loop deviates left or right.
- 13. Loop deviates altitude during rolls.
- 14. Model changes heading during rolls.
- 15. Model rate is too rapid resulting in much less than five seconds.
- 16. Model is not level at finish of roll.

K=10

13.17. Inverted Straight Flight. The model starts the maneuver level and upright, makes a half-roll to inverted. The straight and level inverted for a minimum of five seconds and recovers with a half-roll to the upright position. The Inverted Straight Flight may be down-graded because:

1. Not level at entry.
2. Model deviates left or right.
3. Model deviates altitude or heading.
4. Model flies inverted for less than the seconds.

- 1. Not on same diameter as first loop.
- 2. Loop deviates left or right.
- 3. Loop deviates altitude as entry.
- 4. Finish of loop not at same altitude as entry.
- 5. Recovery not on same heading as first loop.
- 6. Recovery not on same heading as entry.
- 7. Not the same diameter as first loop.
- 8. Loop deviates left or right.
- 9. Recovery not on same heading as entry.
- 10. Recovery not on same heading as first loop.
- 11. Not the same diameter as first loop.
- 12. Loop deviates left or right.
- 13. Loop deviates altitude during rolls.
- 14. Model changes heading during rolls.
- 15. Model rate is too rapid resulting in much less than five seconds.
- 16. Model is not level at finish of roll.

K=10

13.18. Four Point Roll. The model starts in straight and level flight, does one quarter of a horizontal roll till wings are vertical, then hesitates. It then continues with a second quarter roll to inverted, hesitates, does another quarter roll, hesitates and finally does a quarter roll to upright and level flight at same altitude and heading as entry.

- 1. Not on same diameter as first loop.
- 2. Loop deviates left or right.
- 3. Loop deviates altitude as entry.
- 4. Finish of loop not at same altitude as entry.
- 5. Recovery not on same heading as first loop.
- 6. Recovery not on same heading as entry.
- 7. Not the same diameter as first loop.
- 8. Loop deviates left or right.
- 9. Recovery not on same heading as entry.
- 10. Recovery not on same heading as first loop.
- 11. Not the same diameter as first loop.
- 12. Loop deviates left or right.
- 13. Loop deviates altitude during rolls.
- 14. Model changes heading during rolls.
- 15. Model rate is too rapid resulting in much less than five seconds.
- 16. Model is not level at finish of roll.

K=10

13.19. Inverted Straight Flight. The model starts the maneuver level and upright, makes a half-roll to inverted. The straight and level inverted for a minimum of five seconds and recovers with a half-roll to the upright position. The Inverted Straight Flight may be down-graded because:

1. Not level at entry.
2. Model deviates left or right.
3. Model deviates altitude or heading.
4. Model flies inverted for less than the seconds.

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13.14. Rectangular Approach. The Rectangular Approach is connected with the model flying into the wind above the landing circle. A left turn of 90 degrees, a crosswind (eg. a second left turn of 90 degrees), a down-wing leg, a third left turn of 90 degrees, a fourth left turn of 90 degrees and straight flight towards the point of touch down. Note: The contest manager is permitted to change the left turns if he wishes. The Rectangular approach may be down-graded because:

1. Legs of rectangle are not straight.
2. The 90 degree turns are not smooth or precise.
3. Gallups in elevation.
4. Attempts to break out of pattern or go around again—zero points.

Purpose. The purpose of the FAI RC Judges' Guide is to furnish an accurate description of each maneuver and to provide a reference for use in developing a uniformly high standard of judging.

Principles. The principles of judging an RC model should be based on the perfection with which the model simulates full scale aircraft performance. The main criteria for perfection in an individual maneuver can be classified as follows:

1. Precision of the maneuver.
2. Positioning or display of the maneuver.
3. Size or dimensions of the maneuver.
4. Smoothness or gracefulness of the maneuver.

All of these requirements must be met in order for a maneuver to be rated perfect.

Appearance. At the instant the contestant announces his next maneuver, the judge should form an image of the course the model will fly. The judge should adjust his image if the first portion of the maneuver clearly demonstrates that the contestant intends to do a maneuver of much smaller or larger dimensions than the judge anticipated.

It will be noted that forming an image of the forthcoming maneuver is based on seeing the straight and level entry as a reference. The absence of a definite entry into a maneuver increases the difficulty of judging. In precision, and competitors will recognize this as justifying the downgrading.

The straight and level exit from a maneuver is one of the more valuable portions of the maneuver and a calculation of how well the intended course of the maneuver was followed. The pilot will use it to announce "maneuver completed". The absence of a well defined straight and level exit should also result in downgrading.

Positioning. To achieve perfection, the competitor must position his maneuver in such a way that they can be easily judged. The first consideration on position is longitudinal distance from the competitor. All the judges should be located near the competitor so that they obtain identical views of the maneuver. The competitor should center his aerobatic maneuvers in such a way that they can be easily judged. The first consideration on position is longitudinal distance from the competitor. All the judges should be located near the competitor so that they obtain identical views of the maneuver. The competitor should center his aerobatic maneuvers at an average distance of less than 100 meters (328 feet) from himself.

The judge should observe if the competitor is trying to hide his defects by flying at a distance.

Positioning of maneuvers involves more than distance. They should also be presented in a relative direction which displays the most difficult aspects of the maneuver. Specifically, maneuvers which have circular symmetry (such as Loops, Immortals, Cuban Eights and Horizontal eights) should execute their circular path in a plane perpendicular to the line of sight to the model.

End-on, or "canted" presentation of the circular maneuvers should result in downgrading since it increases the difficulty of judging the symmetry of figure 8's and the "tracking" of consecutive loops.

While no special bonus is justified for exceptionally low altitude, excessively high altitude is cause for downgrading. Most maneuvers can be done at less than 100 meters (328 feet) longitudinal distance at altitudes that would not force the judge to look up at more than about 45 degree angle. If maneuvers are executed at high altitudes and close to or above the transmitter in a way that they force the judge to look up vertically or near vertically, they should be downgraded. The main reason for this is that most maneuvers cannot possibly be properly oriented when performed directly overhead.

Size of Maneuvers. The established criteria places an upper limit of about 100 meters for the total vertical size of a maneuver. Most competitors and judges will recognize this as more than ample. It should also be recognized that 100 meters of horizontal distance is a minimum value and not really the optimum. For example, on a inside loop of 30 meters (98') diameter at 45 meter (148')

13.15. Landing. The model flies smoothly to touch the ground with no bouncing nor change in heading above the landing circle. A left turn of 90 degrees, a crosswind (eg. a second left turn of 90 degrees), a down-wing leg, a third left turn of 90 degrees, a fourth left turn of 90 degrees and straight flight towards the point of touch down. Note: The contest manager is permitted to change the left turns if he wishes. The Rectangular approach may be down-graded because:

1. Legs of rectangle are not straight.
2. The 90 degree turns are not smooth or precise.
3. Gallups in elevation.
4. Attempts to break out of pattern or go around again—zero points.

Purpose. The purpose of the FAI RC Judges' Guide is to furnish an accurate description of each maneuver and to provide a reference for use in developing a uniformly high standard of judging.

Principles. The principles of judging an RC model should be based on the perfection with which the model simulates full scale aircraft performance. The main criteria for perfection in an individual maneuver can be classified as follows:

1. Precision of the maneuver.
2. Positioning or display of the maneuver.
3. Size or dimensions of the maneuver.
4. Smoothness or gracefulness of the maneuver.

All of these requirements must be met in order for a maneuver to be rated perfect.

Appearance. At the instant the contestant announces his next maneuver, the judge should form an image of the course the model will fly. The judge should adjust his image if the first portion of the maneuver clearly demonstrates that the contestant intends to do a maneuver of much smaller or larger dimensions than the judge anticipated.

It will be noted that forming an image of the forthcoming maneuver is based on seeing the straight and level entry as a reference. The absence of a definite entry into a maneuver increases the difficulty of judging. In precision, and competitors will recognize this as justifying the downgrading.

The straight and level exit from a maneuver is one of the more valuable portions of the maneuver and a calculation of how well the intended course of the maneuver was followed. The pilot will use it to announce "maneuver completed". The absence of a well defined straight and level exit should also result in downgrading.

Positioning. To achieve perfection, the competitor must position his maneuver in such a way that they can be easily judged. The first consideration on position is longitudinal distance from the competitor. All the judges should be located near the competitor so that they obtain identical views of the maneuver. The competitor should center his aerobatic maneuvers in such a way that they can be easily judged. The first consideration on position is longitudinal distance from the competitor. All the judges should be located near the competitor so that they obtain identical views of the maneuver. The competitor should center his aerobatic maneuvers at an average distance of less than 100 meters (328 feet) from himself.

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Accurate and Consistent Judging. The most important aspect of consistent judging is for each judge to establish his standards and then maintain that standard throughout the contest. It is advisable for the contest director or the chief judge to hold a conference prior to the start in order to discuss judging and make the standards as uniform as possible. This is effected by means of practice flights which all judges score simultaneously and privately. After these flights, the defects in each maneuver should be discussed by all judges and agreement reached about the severity of defects. Once the contest is started, the individual judge should not alter his standard under any influence.

The contest director should clearly define areas in which it is considered unsafe for competitors to perform, such as above spectators, or over buildings etc. The definition of unsafe areas should be absolutely unambiguous.

Judging Individual Maneuvers. When in doubt, give the lower score. Precision is not a common occurrence.

A description of each maneuver is given, and then a number of reasons for downgrading are listed. The maneuver should be downgraded according to:

- 1) the number of defects observed.
- 2) the severity of the individual defects.
- 3) the number of times any one defect occurs.
- 4) the positioning of the maneuver.
- 5) the size of the maneuver.

For example, a small single change in heading during the take-off would be considered one or three defects. It should be noted that defects and that some defects are more than two possible kinds of defects.

A score of 10 should be given only if the maneuver is well positioned and no defects are observed. One or two minor defects should result in downgrading to at least an 8, while one severe defect should put it down to 6, as should a combination of three or four minor defects. Any element in poor positioning should be decided at the start of the maneuver and also fed into the final score for the maneuver. Bad position should be considered as equal to as many as 3 or 4 small defects. Improper size observed during or at the end of a maneuver might also result in as many as 3 to 4 elements.