

The Model Aeronautic Association of Canada

MAAC - RC Scale

"Flight" Judges & Pilots Pre-Contest Review

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This document compliments the Judges Certification program as a summary of the key points for judges training and contestants understanding of the basics which "Static" judges are looking for.

"Flight" Judges & Pilots Pre-Contest Review

Purpose:

To summarize the key Judging points for Judges and Pilots to review before and during a contest to improve results.

As of this writing the Judges Training is based on the U.S. Scale Masters Guidelines; the following information refers to them.

The following information is a review for judges and contestants before a event to help ensure understanding for consistent contest results.

If you utilize the basics of your judging skills learned through the judges certification process you will do well.

The trained Judge will set his/her background knowledge aside and only judge the model flying to the criteria provided in these flight judging guidelines.

Arriving at a score is simply subtracting the downgrades you find from 10. Each element starts at 10 and is downgraded as mismatches are found.

For 'Flight Judging' the deductions are in 1/2 point increments utilizing the basics of judging;

Each Manoeuvre points

Placement (2.5pts. max.) - Precision (5.0pts. max.) - Realism (2.5pts. max.)

Last Manoeuvre - 'Overall Realism' (10pts. Max) - Continuity - Operations - Power management (COP)

Contest rules have little bearing on judging as they vary from contest to contest and between organizations.

- Judging fundamentals are the same no matter where you go - score sheets may change however judges just fill out the scores in the spaces provided on the score sheets.

Judge to the following accuracy

Placement (2.5pts. max.) - **Precision** (5.0pts. max.) - **Realism** (2.5pts. max.)

The flight score sheet provides a space for each numerical digit (up to three spaces). Scores should be to the nearest $\frac{1}{2}$ point (for example 8.5). With the exception of the perfect score of 10.0 only two of the three spaces provided are required.

Each of the contents is scored to the nearest $\frac{1}{2}$ point. A maneuver starts at 10 and then deductions occur.

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This is further detailed as follows:

Flight Judging basics review

Placement (2.5pts. max.) - **Precision** (5.0pts. max.) - **Realism** (2.5pts. max.)

The flight score sheet provides a space for each numerical digit (up to three spaces).

Scores should be to the nearest $\frac{1}{2}$ point (for example 8.5). With the exception of the perfect score of 10.0 only two of the three spaces provided are required.

Precision Content (5 pts.): The pilot's ability to perform the defined maneuver geometry, and when applicable, the Precision of scale operation features within a **maneuver combination**.

- A **maneuver combination's** precision content will be equally divided between maneuver and scale operation (or maximum of 2.5 points each). Should scale operational feature(s) fail to operate or deploy within a **maneuver combination** in a realistic and timely manner due to either mechanical malfunction or pilot error within a **maneuver combination**, the result will be a 50% downgrade in the score for "Precision".
- Precision of flaps, slats, and retracts is demonstrated by their prototypical operation and will only be judged on the pilot's Precision in the "Overall Flight Realism" score. They may also be judged as part of the "Slow Speed Dirty Inspection Pass" described in **Slow Speed "Dirty" Inspection Pass (maneuver combination)**: as a maneuver combination.

Placement Content (2.5 points.): Most in-flight manoeuvres (including those with a "droppable") will optimally be placed directly in front of the judges (judges' centerline) on the manoeuvring line. This will typically be at 10 to 50 feet beyond the far side of the defined runway area for fly-by type manoeuvres. There are times when the contestant will be allowed to offset maneuver to either side of judging center as long as the contestant informs the judges before the maneuver, otherwise the judges will have to default to the judges' centerline for placement. Judges may request manoeuvres be offset to aid in visibility. The contestant is not obligated to offset the maneuver if asked, but he should be aware that if the judges cannot adequately view his maneuver it will be difficult to score. A **maneuver combination's** placement content will be approximately divided between maneuver and scale operations.

- Manoeuvres with horizontal symmetry (Cuban Eight, Loop, Roll, Figure 8, etc.) should have their midpoints on the judges' centerline with equal distance on each side for optimal score.
- Some manoeuvres due to their asymmetry are offset from judging center for best viewing, such as a Stall Turn or Wingover. Also the Procedure Turn is positioned in the Scale Masters Program where the initial 90 degree turn away from the runway begins *before* reaching judging center, and the remaining 270 degree turn starts at judging center to the left or right.

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Placement Content - cont.

- Although the placement of a maneuver normally represents only 2.5 points content, a greater penalty deduction will be imposed in the interest of safety when manoeuvres are performed unnecessarily close to the flight line (over the runway) as described in "Runway Safety and Deadline Infractions" of this Guide.
- Optimum placement of bomb drops will be defined as the point of **impact** in front of the judges at the far side of the defined runway.
- The optimum placement of flaps, slats, and retracts deployment is only included in Overall Flight Realism "Continuity" unless the optional **maneuver combination** of Slow Speed Dirty Inspection Pass is also selected.

Realism Content (2.5 pts.):

The realism content of the score is based upon the pilot's skill in performing manoeuvres with the model like the full-size aircraft in actual flight. The size, shape, and speed of aerobatic manoeuvres performed by a contestant should reflect the capabilities of the full-size prototype.

For example, it would be expected that a loop performed by a J-3 Cub would be smaller in diameter and egg-shaped compared to a loop of a P-51 Mustang if both models were of the same scale. The speed at which each maneuver is performed should also reflect the capabilities of the prototype. Consideration should also be given to throttle position during flight. In many full scale aircraft, power must be reduced on the descent portion of that maneuver. Execution of such manoeuvres by a model at a constant full throttle setting should be downgraded in realism portion.

A particular maneuver may be downgraded for realism content if it is apparent it exceeded the performance capabilities of its full-size counterpart. Manoeuvres that have been classified **only** for non-aerobatic aircraft will still be judged for all maneuver contents without downgrade for all aircraft. However, the "Overall Flight Realism" score may be penalized if such manoeuvres were chosen as options by high-performance aircraft.

For **maneuver combinations** the realism score content will be appropriately divided between manoeuvres and scale operations.

Consider the stability or "smoothness" aspect of each maneuver as well as the power management (throttle) expected for that specific maneuver of the model compared to its full-size counterpart. Both of these considerations will be influenced by aircraft design and wind conditions. Since slow, lightweight aircraft will be much *more visibly influenced by wind* than fast heavier aircraft, wind conditions should be taken into account during judging.

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Realism Content - cont.

- Manoeuvres should appear realistic in scale size of performance (site and conditions permitting). Attitude, bank angle and g-loading appearance through turns should be consistent with those generally observed in the full-size. With scale-size manoeuvres.
- The realism content of a **maneuver combination** will also have approximately the same emphasis between the maneuver and the accompanying scale operation feature(s) regarding realistic motion or other intended activity displayed for realism.

Overall Flight Realism and Score Sheet Review:

'Overall Realism' (10pts. Max)

- Continuity (2.5) - Operations (5.0) - Power management (2.5) (COP)

Scoring will be 2.5, 5.0, and 2.5 points respectively with Options having the greatest emphasis for potential deficiencies.

- After the flight has concluded, the flight judges shall confer to review the numerous Overall Flight Realism qualities as described in this Guide.
- Identical flight realism scoring is not required. Individual judgment scores will still be of value for statistical averaging similar to others.
- Any zero scores given for any maneuver shall be mutually agreed upon by both flight judges and both will give identical scores of zero. .

If the contestant had **declared** the aircraft to be **Non-Aerobatic**, that should be so noted on the check box of the flight score sheet for future reference. Before the score sheets are picked up, each individual judge must put his/her initial in the upper column heading for the flight round just concluded after verifying that all line item scores have been included.

Be fair and be consistent.

- With each score, ask yourself is this fair?
- Is this consistent with other scores I have given for similar aircraft/manoeuvres?
- Establish your own system of keeping track of the downgrades for each of the elements during the maneuver.

A Feedback Symbol key is provided on the flight sheet and is used to point out the major source of downgrade for each maneuver.

- The flight judge should write in the box just to the right of the score box one (or more) symbols as feedback for the pilot so they can improve their score on the next flight.

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Flight Judges Feedback Symbols

Feedback Symbols; are used to point out the major source of downgrade. There could be other items that add to the downgrade.

Scores must be to the nearest $\frac{1}{2}$ point (for example 8.5)

Multi-engine; Score entirely for Mechanical Content, and reliability in flight.

Manoeuvre Feedback Symbols

Precision (5pts)	Placement (2.5pts)	Realism (2.5pts)
 Heading Off	 Too High	Bank Angle extreme
 Symmetry Off	 Too Low	 Bank Angle - too shallow
 Off Center	 Not Centered - too right	 Jerky, Abrupt
 Wings not Level	 Not centered - too left	 Throttle not Managed
 Entry altitude different than exit	 Not Centered	 Landing Gear Realism
 Roll Rate not Constant	 Placement too Close	Too Fast S +
 Turn not 90 degrees	 Placement too Far	Too Slow S -

Note 1: There may be other symbols used particular to a judge. It is okay to ask them what it means for clarification.

Note 2: Judges are encouraged to share their symbols with USSMA to include in the next revision of the Guide.

Note 3: There is no symbol for "scale speed", instead the optimum speed required is determined by maneuver realism and speed-sensitive "realistic bank angles in turns" as described within the Definitions section of this Guide.

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Judges Pre-flight checks

Ensure the 'Flight Score Sheet' has been completely filled out by the contestant when they hand this to you.

1. Common items that are missing are the checkbox in Aerobatic or Non-Aerobatic aircraft type, their name and registration number in each flight round box.
2. Check the flight sheet for any comments by the CD about items attached to the aircraft during static judging such as wing tanks, bombs, torpedoes, etc. These items if presented at static should be on the aircraft for flight.
3. Next, make sure there is a pilot visible in the aircraft if there should be one visible.
4. List of Automatic Downgrades are as follows:
 - a). **No Retracts**; If the model does not have retractable gear when the full size did, then deduct 4 points from the Overall Flight Realism score.
 - b). **No Flaps**; If the model does not have or the pilot does not use flaps during the flight where applicable, deduct 2 points from the Overall Flight Realism score.
 - d) **No Pilot Figure**; A pilot figure must be visible during flight (if the full size was visible) or the score will be downgraded by 2 points for Overall Flight Realism.
 - e). **Flying through the sun**; If the pilot flies his aircraft directly into the sun during the scoring portion of a maneuver, the flight judge downgrades that maneuver by 2.5 points (zero score for placement).
5. Remember that the contestant starts each maneuver with 10 points. Each maneuver is scored against the three elements;

Manoeuvres

MODEL AERONAUTICS ASSOCIATION of CANADA
MODÉLISTES AÉRONAUTIQUES ASSOCIÉS du CANADA

On the flight line it is very important that the Judges understand the manoeuvres and how they will be flown.

Pilots - use the manoeuvres described in the Judges Certification document; if other than those you must get them approved by the Contest Director. There is a form to fill out.

Judges - ensure understanding of the manoeuvres before the flight routine starts. Review the flight score sheet 'Manoeuvres': if you are unsure about a manoeuvre ask the pilot how they are going to fly it. If the manoeuvre is totally unfamiliar to you ask for a CD approved description.

Note: If a pilot says he is going to fly a routine of a 'drunk' pilot; reply that you are going to judge like a drunk judge; Judge per the manoeuvre description and how you are trained.

Following the above key points for RC Scale Aero-Modelling "Flight" judging will help to provide consistency in judging and contest results.

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Definitions

Optimum Speed for overall flight realism is defined as that optimum speed which provides maneuver realism for realistic flight attitude appearance including bank angles in turns, realistic g-loading appearance and with appropriate maneuver size. For example, the model should not be flown excessively fast where it may demonstrate unrealistic high bank angle attitudes and high g-loads.

Also, the model should not be flown too slowly where unrealistic shallow bank angles or flat turns do not simulate the full-scale aircraft.

"The model should be flown at speeds that best simulate prototypical manoeuvres and overall flight. The model should not be flown excessively fast where it may result in unrealistic high bank angle attitudes and high g-loads for typical turns, or excessively slow that results in unrealistic flat or shallow angle turns."

For further information on this subject, you can refer to the article "Maneuver Realism Speed" at: http://www.scaleaero.com/maneuver_realism_speed.htm

Definitions -cont.

CD: Contest Director, as certified by the MAAC/AMA. The CD is responsible for overall safety, organizing and running the contest.

Air Boss: is the person in charge of the active flight line.

- Gives pilot's clearance to runway accesses.
- Responsible for assigning help with CD to ensure contestants are ready to fly 'On Time.'

Non Aerobatic: These are aircraft designed with limited manoeuvrability where the original prototypes of which were restricted by the manufacturer or licensing government agency.

- Typically these aircraft do not exceed 60-degree bank angles or 30-degree pitch angles.
- Typically these aircraft are not capable of inverted flight, extreme attitudes, or high-G manoeuvres.

Also see "Overall Flight Realism Score" for scoring aerobatic/non-aerobatic aircraft.

Judges' Centerline: is an imaginary line straight out from the judges' position, perpendicular to the runway.

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Manoeuvring line: is an imaginary line parallel to the runway, 10 to 50 feet beyond the far side of the active runway. The 10-foot line would be for slower flying aircraft and the 50-foot line would be for faster models like high-speed jets.

Judges' Deadline: is an imaginary line parallel to the 'Edge' of runway. It extends out to infinity both left and right directions. It is the safety line determined by the flying site behind which no flying is allowed.

Deadline Infractions: An entire aircraft crossing the deadline, as observed and agreed to by the judges, during any part of a flight will incur a warning to the contestant and score a zero for the maneuver being performed (or the previous maneuver if the occurrence is between manoeuvres). The contestant should be alerted to the infraction as soon as practical. A repeat crossing of the deadline disqualifies the flight and the contestant must land immediately. The deadline is defined as a line located 10 to 15 feet in front of the judges' stations and paralleling the runway and extending both directions to infinity.

Viewing Angle: is defined as a 90-degree field of view for the judges equally spaced from the judges' centerline e.g., 45-degrees to the left and 45-degrees to the right of center.

Training is the key to judging success and MAAC is committed to develop and train to these standards. There is still much work to be done and your input is valued. Feel free to contact your MAAC Scale Committee rep. with any suggestions or ideas that could help with this effort.

Improvements:
MODEL AIRCRAFT ASSOCIATION of CANADA
MODÉLISTES AÉRONAUTIQUES ASSOCIÉS du CANADA

Please contact your area Scale Representative if you see "Opportunities to improve."

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