

6.3. CLASS F4C - RADIO CONTROLLED FLYING SCALE MODEL AIRCRAFT

6.3.1. General Characteristics

Maximum weight of the complete model aircraft without fuel in flying condition including any dummy pilot: 15 kg (≈150 Newton)

Model aircraft using electric motors as a power source shall be weighed without batteries used for those motors.

Motive Power: Rocket or pulse jet engines may not be used.

Note: For all other scale model aircraft specifications see Volume *General Rules*, Section B, Paragraph B.1.3 General Characteristics of Model Aircraft.

6.3.2. Noise

If a model aircraft appears to be noisy in flight, the Chief Judge or Flightline Director can demand a noise test. The transmitter and the model aircraft will then be impounded by the flightline official immediately following the flight. No modification or adjustment to the model aircraft shall be permitted other than refuelling. If the model aircraft features variable pitch propeller(s), the noise test will cover the total variation of pitch. The model aircraft shall be tested by a noise steward and in the event the model aircraft failing the noise test it will be re-tested by a second noise steward, using a second noise meter. If the model aircraft also fails the re-test, the score for the preceding flight shall be zero. This is a final decision. The sound meters must be of good quality with a test system (reference noise).

The maximum noise level will be 96 dB(A) measured at 3 metres from the centre line of the model aircraft with the model aircraft placed on the ground, over concrete or macadam, at the flying site. With the engine running at full power, measurement will be taken 90 degrees to the flight path on the side chosen by the competitor and downwind from the model aircraft. The microphone will be placed on a stand 30 cm above the ground in line with the engine(s). No noise reflecting objects shall be nearer than 3 metres to the model aircraft or the microphone. If a concrete or macadam surface is not available then the measurement may be taken over bare earth or very short grass, in which case the maximum noise level will be 94 dB(A). In the case of multi-engine model aircraft, the noise measurement will be taken at 3 metres from the closest engine to the noise meter and the maximum noise level will be the same as for single engine model aircraft. Turbine engines will not be subject to noise measurement.

6.3.3. Official Flights

- a) Each competitor will be called to fly three rounds, and must execute an official flight within the required time limit (see 6.3.4.) on each occasion to be eligible for flight points for that flight.
In the case of two flightlines (see 6.1.4) each competitor will fly four rounds, two in front of each panel of judges and two on each flight line and the lower score from each panel will be deleted.
- b) If a competitor is unable to start or complete a flight and, in the opinion of the Contest/Flightline Director, the cause is outside the control of the competitor, the Contest/Flightline Director may, at his discretion, award the competitor a reflight. The Contest Director shall decide when the reflight shall take place.
- c) An official flight commences at the earliest of the following:
 - i) The competitor signals to the timekeeper that he is commencing to start his engine(s).
 - ii) Two minutes after the competitor is instructed to start his flight.
 - iii) An official flight is terminated when the model aircraft lands and stops, except during the option 6.3.7.M. (Touch and Go).

6.3.4. Flying Time

- a) A competitor will be advised that he will be required to start his flight not less than 5 minutes before the instruction to start.
- b) The competitor will then be instructed to start his flight.
- c) Timing of the flight will commence when the official flight commences (see 6.3.3.c.).
- d) The competitor will be allowed 17 minutes to complete his flight.
- e) In the case of a multi-engined model aircraft, the time allowed in (d) above will be increased by one minute for each additional engine.
- f) No points will be awarded for any manoeuvre that is not completed at the end of the time allowed.

6.3.5. Starting Time

- a) If the model aircraft is not airborne within 7 minutes, plus one additional minute for each extra engine, after the official flight and timing commence, the official flight will end and no points will be awarded for the flight.
- b) If the engine(s) stops after the take-off has commenced, but before the model aircraft is airborne, the engine(s) may be restarted. There is only one attempt allowed to repeat the whole procedure. In the case of a repeated attempt, no points will be assigned for the interrupted manoeuvre.

Note: In this case rule 6.3.5(a) still applies.

6.3.6. Flight

6.3.6.1. Take-off	K = 11
6.3.6.2. Option 1	K = 7
6.3.6.3. Option 2.....	K = 7
6.3.6.4. Option 3.....	K = 7
6.3.6.5. Option 4.....	K = 7
6.3.6.6. Option 5.....	K = 7
6.3.6.7. Option 6.....	K = 7
6.3.6.8. Option 7.....	K = 7
6.3.6.9. Option 8.....	K = 7
6.3.6.10. Approach and Landing	K = 11
6.3.6.11. Realism in flight	
a) Model Sound.....	K = 4
b) Speed of the model aircraft	K = 9
c) Smoothness of flight.....	K = 9
Total K Factor.....	K = 100

Notes: The flight schedule must include the two manoeuvres “Figure Eight” and “Descending 360° Circle” to be accepted as complete.

The scale of the model aircraft and the cruising or maximum speed of the prototype must be stated on the example Flight Score Sheet (Annex 6E.2.)

Only one attempt is permitted for each manoeuvre, the only exception is the procedure of getting a model aircraft airborne, as defined in 6.3.5.b.

6.3.7. Optional Demonstrations

The manoeuvres “Figure Eight” and “Descending 360° Circle” are mandatory manoeuvres to be included in each flight and positioned in the flight schedule at the competitor’s discretion.

Competitors must be prepared, if required by the judges, to give evidence that the options selected are typical and within the normal capabilities of the aircraft subject type modelled. Only one manoeuvre involving the demonstration of a mechanical function may be included in a competitor’s choice of options. These include (options D (Bombs/Fuel Tank Drop), L (Parachute Drop), and, if applicable, P or Q (Flight Functions by subject aircraft).

Selection must be indicated on the score sheet and given to judges before commencing the flight. The options may be flown in any order. Options A (Chandelle), N (Overshoot), R (Flight in triangular circuit), S (Flight in rectangular circuit), T (Flight in a straight line at constant height), Z (Procedure Turn) and AA (Straight flight at low speed) may only be chosen by subjects certified and approved as “non-aerobatic” on the Competitor’s Declaration Form (Annex 6E.1). These are aircraft designed with limited manoeuvrability where the original prototypes of which were restricted by the manufacturer or licensing government agency.

Examples are:

Pioneer and early aircraft (pre 1915)

Purpose designed reconnaissance and bomber aircraft (note: this does not include fighter aircraft later adapted for reconnaissance duties or fighter/bombers where the designer intended an aerobatic capability)

Touring aircraft

Passenger and cargo aircraft

Military transports

If these non-aerobatic manoeuvres are flown by models NOT certified as non aerobatic, then they shall be marked zero.

A competitor may not select option “C” (Retract and extend flaps) if option “B” (Retract and extend landing gear) has also been selected.

The order in which all manoeuvres are to be flown must be marked on the score sheet and any manoeuvre flown out of order will be marked zero.

A Chandelle	K = 7
B Retract and extend landing gear	K = 7
C Retract and extend flaps	K = 7
D Dropping of bombs or fuel tanks	K = 7
E Stall turn.....	K = 7
F Immelmann turn	K = 7
G One loop.....	K = 7
H Split S (Reversal).....	K = 7
I Cuban eight	K = 7
J Normal spin (three turns)	K = 7
K Roll	K = 7
L Parachute.....	K = 7
M Touch and go	K = 7
N Overshoot	K = 7
O Side slip to left or right	K = 7
P 1 st Flight function by subject aircraft	K = 7
Q 2 nd Flight function by subject aircraft	K = 7

Competitors may demonstrate up to two different flight functions of their own choice, but must supply evidence that each function was performed by the prototype modelled. Competitors must indicate on the declaration form and to the Chief Flight Judge the nature of the demonstration(s) before going to the flight line).

R Flight in triangular circuit.....	K = 7
S Flight in rectangular circuit	K = 7
T Flight in a straight line at constant height (maximum height 6 metres)	K = 7
U Flight in a straight line with one engine throttled (for multi-engined model aircraft only)	K = 7
V Lazy Eight	K = 7
W Wingover.....	K = 7
X Inverted flight.....	K = 7
Y Derry Turn.....	K = 7
Z Procedure Turn.....	K = 7
AA Straight flight at low speed	K = 7

6.3.8. Marking (flight points)

Each manoeuvre will be awarded marks from 0 to 10, using increments of half a mark, by each of the judges during the flight. These marks are multiplied by the appropriate K - factor in each case.

The manoeuvres must be performed in a plane and at a height that will allow them to be seen clearly by the judges. The non-observance of this rule will be penalised by loss of points.

6.3.9. Flight Score

All flight scores will be recorded on the score sheet. It is the competitor’s responsibility to ensure that his personal details, the details of the model and the chosen options are correctly entered on the score sheet and that sufficient copies are presented to the judges before each official flight commences.

The scores of all three judges will count towards the final score.

The flight score shall be the sum of the points awarded by all three judges in 6.3.6.

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Normalisation:

The total flight score of each competitor for each round will be normalised to 1000 points as follows:

$$\text{Flight Points}_x = F_x / F_w \times 1000$$

Where:

Flight Points_x = Normalised Flight Score for competitor x

F_x = Flight Score for competitor x and

F_w = Highest Flight Score

6.3.10. Final Scoring:

For each competitor, add the normalised static score earned in 6.1.10. to the average of the normalised scores of the two best flights under 6.3.9. If the competitor has achieved only one flight, the normalised score awarded for that flight will be divided by two.

If for any cause beyond the control of the organisers (eg. B.11.1.) less than three official rounds can be flown, the scoring shall be completed as follows:

- a) If two rounds are flown, the average of the normalised scores of the two flights as in 6.3.9. will be used.
- b) If only one round is flown, the single normalised flight score of that one round will be recorded.
- c) The scores in an official round can be recorded only if all competitors had equal opportunity for a flight in that round.

The national team classification for World or Continental Championships is established after the completion of the championship by adding the scores of the three members of the team together unless there is a fourth member of the team (who must always be a junior) in which case it will be the three best scoring members.

In the case of a national team tie, the team with the lower sum of place numbers, given in order from the top, wins. If still equal, the best individual placing decides.

6.3.11. Safety:

- a) All manoeuvres must be performed parallel with the judges' line such that if any part of the manoeuvre is performed behind the judges' line it will score ZERO.
- b) Exceptions from this rule are manoeuvres 6.3.1. Take-off, 6.3.6.10 Landing, and 6.3.7.m. Touch and Go. These manoeuvres have the right to be performed into wind as long as they do not overfly a designated area behind the judges' line laid out for the protection of spectators, officials and other competitors or helpers.
- c) If a model aircraft is in the opinion of the Chief Judge or Flightline Director unsafe, or being flown in an unsafe manner, he may instruct the pilot to land.

6.9. CLASS F4H - RADIO CONTROLLED STAND-OFF SCALE AEROPLANES

6.9.1 General Characteristics

The General Characteristics of the model shall be the same as F4C. (Para 6.3 refers).

6.9.2. Eligibility

Any model which has previously been placed in the top five (5) in a Continental or World Championship F4C competition during the last 6 years, including repaints and rebuilds, will NOT be permitted in F4H. The requirement for the competitor to have constructed his own model (rule 6.1.9.4.e) is not applicable to Stand-Off Scale; however the surface finish (colour and markings) on the model must have been applied by the competitor.

6.9.3 Declaration

The competitor must complete and sign the Declaration Form at ANNEX 6E.1 certifying that he has applied the surface finish (colour and markings) to the model. The declaration also includes a questionnaire which is used by the Static Judges to assess how much the competitor contributed to the Scale Accuracy. If an incorrect declaration is subsequently revealed, the competitor may be disqualified from the contest. The competitor may also use photographs or sample material in support of the declaration.

Note: The declaration must be consigned by the Competitor's NAC to be valid.

6.9.4 Static Judging

- a) The appointment of Static Judges is stated in 6.1.4. The final static score shall be the sum of the individual judge's marks.
- b) All static judging is carried out at a distance of 5 metres. This is measured from the centre line of the model to the judges seating position.
- c) Each of the following items will be awarded a mark out of 10 by each Judge using increments of a tenth of a mark.

6.9.4.1 Scale Accuracy.

This an assessment of the outline accuracy of the model compared with the prototype as seen from three aspects (side, front and top plan), judged by comparison with the documentation presented.

6.9.4.2 Originality of Model Design & Construction

This is an assessment of the extent to which the scale accuracy of the model is due to the effort of the competitor. Maximum marks will be awarded to a model which is constructed in its entirety by the competitor (Own design, from drawings or a traditional kit). A model which is built from a modern kit might score a little less, depending upon the extent of prefabrication. An ARTF model will score close to zero (unless evidence is presented of extensive modification by the competitor).

6.9.4.3 Colour and Markings Accuracy

This is an assessment of the accuracy of the colour and markings of the model by comparison with the documentation presented.

6.9.4.4 Colour and Markings complexity

This is a subjective assessment of the difficulty in reproducing and applying the finish and markings to the model.

6.9.4.5 Realism

This is a subjective assessment of how well the model captures the character of the prototype as illustrated by the documentation; taking into account the surface finish, weathering and any detail that is noticeable at 5 m.

6.9.5 Static Judging

Item	K-factor
Scale Accuracy	
Side view	K= 13
Front view	K= 13
Top view	K= 13
Colour	
Accuracy	K= 7
Complexity	K= 3

Markings

Accuracy	K= 10
Complexity	K= 5
Realism	K= 16
Originality of Model Design & Construction	K= 20
Total	K= 100

Normalisation:

The total of the competitors' static scores will be normalised to 500 points as follows:

$$\text{Static Points}_x = S_x/S_w \times 500$$

Where:

Static Points_x = Normalised Static Score for competitor x

S_x = Static Score for competitor x and

S_w = Highest Static Score

6.9.6 Documentation

- The documentation requirement is the minimum considered necessary to fully assess the outline from 3 aspects, the colour, the markings and the realism. As with all scale aeroplanes static judging, good photographs are the prime means of judging scale accuracy. Photographs and reproductions should be of a reasonable size, (approximate A5 minimum) and presented on separate sheets or as a montage no larger than A2. A book with page markers is not acceptable.
- There are no prescribed penalties for missing or inadequate documentation, but judges can only award marks on the basis of the documentation available. Poor documentation will be reflected in reduced scores and any item of static judging for which there is no documentation will result in a Zero score for that item.

6.9.6.1 Photographic evidence:

A minimum of one (1) photograph or printed reproductions and a maximum of five (5) photographs or printed reproductions of the prototype, one or more of which must show the actual subject aircraft being modelled. At least one photograph must show the whole aircraft. Photographs of the model are not permitted unless it is posed alongside the full size prototype modelled for proof of colour. Photographs which show evidence of digital manipulation shall result in disqualification. There is no requirement for close up or detailed photographs, but additional photographs (within the maximum of 5 total) can be used to support the three aspects if the outline needs clarification.

6.9.6.2 Drawings:

Three view drawings are required and will be used by the judge as the basis for judging outlines. Drawings must conform to the requirements of rule 6.1.9.4(b). Photographs take precedence when discrepancies exist between the drawings and the chosen subject.

6.9.6.3 Proof of colour and markings:

This may be in the form of colour chips or original paint samples, colour photographs (which may be the same photos supplied for outline), or colour illustrations published in books, magazines or on kit boxes. Published descriptions are also acceptable when accompanied by examples of similar colours used on other aircraft types. Authenticated colour chips will not be a requirement for proof of colour.

6.9.7 Flying Schedule

The Flying Schedule shall be the same as F4C (Paragraph 6.3. refers)

Normalisation:

The total flight score of each competitor for each round will be normalised to 1000 points as follows:

$$\text{Flight Points}_x = F_x/F_w \times 1000$$

Where:

Flight Points_x = Normalised Flight Score for competitor x

F_x = Flight Score for competitor x and

F_w = Highest Flight Score

6.9.8 Final Scoring

For each competitor, add the normalised static score earned in 6.9.5 to the average of the normalised scores of the two best flights under 6.9.7. If the competitor has achieved only one flight, the normalised score awarded for that flight will be divided by two.

If for any cause beyond the control of the organisers (eg. B.11.1.) less than three official rounds can be flown, the scoring shall be completed as follows:

- a) If two rounds are flown, the average of the normalised scores of the two flights as in 6.3.9. will be used.
- b) If only one round is flown, the single normalised flight score of that one round will be recorded.
- c) The scores in an official round can be recorded only if all competitors had equal opportunity for a flight in that round.

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In the case of a national team tie, the team with the lower sum of place numbers, given in order from the top, wins. If still equal, the best individual placing decides.