

Rulebook International Indoor Fly In



Nijmegen, Netherlands

**Scale classes: F4D, F4E, F4F Peanut, Pistachio, Kit
Scale, Profile Scale**

Duration classes: F1D, F1N, F1L, F1M, Sainte Formula,

Fun class: Glider Scale

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General Scale Rules

For the classes: F4D, F4E, F4F, and Pistachio

International Indoor Fly In

Version: 2017



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Remark:

Our thanks go out to the BMFA for allowing us to use their rule system. The rules as presented are extracted from the BMFA rule book. Everything that was not applicable to the four indoor scale classes has been deleted for clarity. Where the original rules referred to BMFA this has been substituted. Please note that the original numbering and lettering has been maintained in order to keep it clear what rules we have omitted!

6.1 General

6.1.1 GENERAL SCALE RULES

These rules apply to all scale classes unless stated otherwise in the class rules.

6.1.1.1 Definition of Scale Models

A scale model aircraft shall be a reduced scale reproduction of a full size aircraft. The full size aircraft which has been modelled must have flown and models of pilotless aircraft or drones are not permitted. N. B. Throughout these rules the word "subject" is used to refer to the specific full size aircraft that has been modelled. The aim of scale contests is to accurately recreate the appearance and realism of the full-size aircraft both on the ground and in flight.

6.1.1.3 Builder of the Model Rule

Scale models must be constructed and finished solely by the competitor, team entries are not permitted. The Competitor must also prepare the model for flight. Commercially available components, machined parts, components manufactured using a computer aided process, die or laser cut parts and prefabricated airframe components manufactured by a third party, whether specifically for the model or supplied as part of a kit' may be used in the construction of scale models. However details of these items must be entered on the Competitors Declaration and will be taken into account during static judging. If the competitor has produced any airframe components or canopies which required the use of any moulds or plugs which were manufactured by a third party then the details must be entered on the Competitor's Declaration. The only exceptions to this rule are for models entered in R/C Stand-Off and all Flying Only competitions.

6.1.1.5 Name and Scale of Model

The exact name and variant or mark number of the subject aircraft shall be written on the entry form, score sheets, the Competitors Declaration and in the 'proof of scale' documentation. The scale to which the model is built is optional, but must also be stated on both static and flight score sheets.

6.1.1.6 Competitor's Declaration

The Competitor must complete and sign a declaration that his model conforms to the current requirements and rules appropriate to the class of model. Because rules may be subject to change on an annual basis the declaration must be made on the current proforma.

Declaration forms for Free Flight classes are available from the Scale Competition Secretary or the forms can be downloaded from the Scale Technical Committee website at www.scalebmfa.co.uk. Any components of the model including any moulds or plugs used to produce such components and also including components produced using a computer aided process, which are NOT entirely manufactured by the competitor, must be listed on the Competitors Declaration. The only exceptions are Engines, electrical/electronic equipment and fixings e.g. nuts, bolts, screws etc which need not be declared.

6.1.1.8 Judges

The organiser shall appoint at least two flight judges and where appropriate at least two static judges

Flight Judges should have a good general knowledge of the typical performance limitations of different categories of full size aeroplanes. Clearly judges cannot be expected to possess detailed knowledge of the performance and limitations of all aeroplanes likely to be modelled but judges should be aware of their generic differences.

Static Judges must discount any prior or special knowledge of the subject aircraft and the scale accuracy of the model must be assessed solely on the documentation submitted by the competitor.

As soon as practicable after each flight, the flight scores should be calculated and made available to the competitors. Static judges will retain the static score sheets until all BMFA Scale Rules Effective January 2017 5 models have been static judged and only then will the scores be calculated and released to the competitors. Competitors are not permitted to question their marks with judges or officials during the event, unless submitting a formal protest.

After the results have been announced and subject to the agreement of the judge or judges in question, competitors are free to discuss any aspect of their model and their flight performance.

6.1.1.9 Protests and Appeals

- (a) Any competitor wishing to register a protest must do so at the event to the Contest Director
- (b) If not satisfied with the CD's decision the competitor must, at the event, hand him the protest in writing, together with a fee of double the standard entry fee. The CD will then immediately empanel a jury of three persons to deal with the protest.
- (c) The jury's decision is final.
- (f) If the written protest or the appeal is upheld, the protest fee will be returned.

6.1.1.10 Scoring System

The order of merit for scale competitions is decided on a final score which is normally made up from flying and static elements in equal proportions. This is achieved by ensuring that the number of Flight judges is equal to the number of Static Judges, but in the event that this is not possible the CD is responsible to ensure that the scores are suitable factored.

Exceptions to this rule are detailed in the appropriate class rules and certain events identified as 'flying only' which do not have a static element in the final score.

All scoring is to be on the prescribed score sheets which are available from the Contest Director.

Static and Flight judges shall award **marks** from 0 to 10 inclusive for each item or manoeuvre using increments of 0.1 of a mark

Where a coefficient (K-factor) is noted, the **score** for each item is then calculated by multiplying the marks awarded by the K-factor.

Static Score

The static score shall be the sum of the scores awarded by all Static Judges.

The Static Score can only be used in the calculation for the final competition result when the model aircraft has completed an official flight.

Flight Score

The flight score shall be the sum of the scores awarded by all the Flight Judges.

The scores in an official round can only be used in the final competition result if all competitors had an equal opportunity for a flight in that round.

Final Scoring/Competition Results

Unless otherwise stated in the class rules, the final score shall be the sum of the static score and the average of the two best flight scores.

If only one round is flown, the single flight score will count.

6.1.1.14 Helpers

Each competitor is permitted one helper during a flight. An additional helper may assist with engine starting and pre-flight preparation should the competitor require this. In the case of multi-engine models, one additional helper is permitted to assist in the starting of engines. All but one helper must retire clear of the flying area before the take-off commences.

6.1.1.16 Dummy Pilot

If the pilot of the subject aircraft is visible from the front or from the side during flight, a dummy pilot of scale size and shape should be equally visible during flight in the model. If such a pilot is not fitted, the total flight score shall be reduced by 10%.

The dummy pilot may be present during static judging but shall not be taken into account.

6.1.1.17 Propellers

Models of propeller driven aeroplanes may have the scale propeller/s replaced with a flight propeller/s of any shape and form.

If the model is fitted with a spinner/s when static judged, the scale spinner/s may also be replaced with a flight spinner/s but this/these must be of the same size, shape and colour as the scale spinner/s. In this event these flight spinner/s must also be presented with the model for static judging.

If a model of a multi-engine aircraft uses non-powered (windmilling) propellers, these must not be changed between static and flying. Features such as, for example, the small generator propeller on the nose of an aircraft such as a Me163, must likewise not be changed for flying propellers.

For rubber powered aircraft the removable nose block with thrust bearing may be considered as part of the flying propeller. The flight nose block must be similar in appearance to the static nose block and should be presented with the model for static judging

Metal-bladed flying propellers are forbidden.

6.1.1.18 Droppable Stores or Ordnance

Stores that are to be released from the model in flight must be presented for static judging but may be replaced before flying by simpler examples of the same size and colour. Explosives or incendiary devices must not be carried or released from the model.

6.1.1.19 Take-off aids

All models shall become airborne in the manner of the subject full size aircraft.

Models of seaplanes and floatplanes, in all classes, may use wheels or wheeled dollies for take-off in the absence of suitable water surface conditions. A similar consideration also applies to models fitted with skis. Deviation from scale, through inclusion of permanently-attached wheels, skids or similar non scale devices in the model structure shall, in this case, be disregarded during static judging.

Free flight models may be hand launched, in which case the take-off shall score zero.

6.1.2 STATIC JUDGING

These rules apply to all scale classes unless stated otherwise in the class rules

6.1.2.1 Proof of Scale

Proof of scale is the responsibility of the competitor.

The documentation provided should be as comprehensive as possible if a high static score is to be achieved. Any feature of the model which is not supported by documented evidence will not be marked.

6.1.2.2 Documentation

(a) Proof of Scale Accuracy (outline) This must be in the form of photographs or printed reproductions and drawings.

(i) Photographic evidence:

At least three different photographs or printed reproductions of a full size aircraft which must be the same type and mark number as the actual subject aircraft being modelled.

Each of these photographs or printed reproductions, which need not be originals, must show the complete aircraft, preferably from different aspects and with a minimum aeroplane image size of 150mm.

At least one photograph or printed reproduction must show the actual subject aircraft modelled.

Photographs of the model are not permitted unless the model is posed alongside the subject aircraft and the photo used as proof of colour.

Additional photographs used as evidence of scale detail or markings may be of any size.

Photographs based on digital files may be resized or cropped, but the use of photographs which show evidence of being enhanced or manipulated shall result in disqualification.

(ii) Scale Drawings:

Accurate scale drawing(s) of the full-size aircraft that show at least the 3 main aspects of Side View, Upper Plan View and Front End View. These drawings must be to a common scale giving a minimum wing span of 250 mm (150 mm minimum for Indoor and Free Flight classes), and a maximum wing span of 500 mm. If the fuselage is longer than the wingspan, these measurements will be made on the fuselage drawing.

Unpublished drawings produced by the competitor or other draftsman are not acceptable unless certified accurate in advance of the contest by an authoritative source such as the BMFA Scale Technical Committee, the builder of the original aircraft, or other competent authority.

(b) Proof of Colour:

Correct colour may be established from colour photographs, from published descriptions, from samples of original paint, or from published colour drawings. For the F4 classes written descriptions must be accompanied by colour chips certified by a competent authority.

(c) Proof of Markings

This may be in the form of colour photographs (which may be the same as those supplied for outline), or published colour illustrations from books or magazines. Black and white photos or illustrations are acceptable if accompanied by suitable colour samples. Published descriptions are also acceptable when accompanied by examples of markings used on similar types. Evidence of all the markings including their position on the subject aircraft must be provided to avoid loss of marks.

6.1.2.3 Penalties for inadequate documentation

Failure to provide sufficient or adequate proof of scale documentation will result in a reduction of marks as follows:

(a) Fewer than 3 full photos of prototype:

ZERO points for Scale Accuracy	(6.1.2.5.1)
Likely downmarking of Realism	(6.1.2.5.4)
Likely downmarking of Craftsmanship	(6.1.2.5.5)
Likely downmarking of Scale Detail	(6.1.2.5.6)

(b) Missing or unauthorised drawings:

ZERO points for Scale Accuracy	(6.1.2.5.1)
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(c) No photo of subject aircraft:

ZERO points for markings	(6.1.2.5.2)
Likely downmarking for Realism	(6.1.2.5.4)

(d) Incomplete colour documentation:

ZERO points for Colour	(6.1.2.5.3)
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6.1.2.4 Presentation of Documentation

The static judges have a difficult task to do in a short period of time. Documentation should therefore be presented in a format that can be quickly and accurately assessed and superfluous or contradictory evidence should be avoided.

The documentation should be presented on separate sheets to avoid the requirement for judges to continually turn pages for cross-references. Sheets or boards should not be smaller than A4 and not larger than A2. It will assist the judges if the documentation is presented in a format that reflects the sequence of the judging aspects, e.g. Side view, End view, Plan view, Markings, Colour, Surface Texture, Scale details etc.

All documentation should relate to the subject aircraft whenever possible; variations from this must be clearly marked if not otherwise obvious.

6.1.2.5 Judging for Fidelity to Scale and Craftsmanship

Each of the following will be awarded a mark out of 10 in increments of 0.1 of a mark by each Judge:

1a. Scale accuracy	Side view	K = 13
1b. Scale accuracy	End view	K = 13
1c. Scale accuracy	Plan view	K = 13
2. Markings	Accuracy	K = 8
	Complexity	K = 3
3. Colour	Accuracy	K = 3
	Complexity	K = 2
4. Surface Texture and Scale Realism	Surface Texture	K = 7
	Scale Realism	K = 7
5. Craftmanship	Quality	K = 12
	Complexity	K = 5
6. Scale Detail	Accuracy	K = 9
	Complexity	K = 5
	Total K	K = 100

Judges Guide For Static and Flying Judging

For the classes: F4D, F4E, F4F, and Pistachio

International Indoor Fly In

See: Remark in General Rules



1. STATIC JUDGES GUIDE

Applicable to the following classes:

SCALE FREE FLIGHT CLASSES and partial relevance to PEANUT, PISTACHIO & KIT SCALE

Relevant Rules - BMFA Rule Book - Section 6.1.2

1.1 General

The static evaluation is broken down in accordance with rule 6.1.2.4 and each item is marked out of 10 in increments of 0.1 of a mark. Judges must work as a team and attempt to reach agreement on the marks to be awarded for each item. Although each judge retains the right to differ, any degree of difference should be minimal.

Regardless of the actual marks awarded, it is imperative that an accurate and fair comparison is attained across the whole range of models entered. The relative mark of one model compared to another is the most important standard to be achieved.

Before any static judging commences, the judges should make a general survey of as many as possible of the models entered in the competition in order to establish a standard for the complexity aspects. All the models should be studied in relationship to each other from a superficial aspect only. Judges are encouraged to make use of analysis sheets and electronic or other archive devices to achieve this comparison.

If the model aircraft has completed a scoring flight before being static judged in the same competition, any damage sustained during that flight shall be ignored by the static judges provided it is practical to do so and the model is intact.

Static Judging should ideally be carried out under cover or indoors, however if this is not possible or practical, it is important to ensure that the quality of lighting is consistent.

With the possible exception of the Stand-Off Classes, where models can be judged when they are on the ground, the contest organisers should have made provision for the models to be supported by their undercarriage, at a height which allows the judges to comfortably view the centreline of the model and large enough to allow the model to be rotated in the horizontal plane.

The competitor must be available throughout the static judging process in case the judges need to question the competitor on any aspect of the model or the documentation.

Depending upon the size of the model, additional handlers should also be available to position the model as directed by the judges. Direct measurement of the model is not permitted and with the exception of all the indoor classes, models should not be handled by the judges. I

It is important that the judges retain all the score sheets until all the models have been judged in case any corrections are necessary.

1.2 Competitors' Declaration and the 'Builder of the Model rule'

Judges must carefully examine the Competitors Declaration to ensure that it has been correctly completed and that there are no conflicting statements.

The purpose of the declaration questionnaire is to assist the static judges to determine the method of construction and the extent to which any components not manufactured by the competitor have contributed towards the scale accuracy.

The Builder of the Model rule effectively means that if the competitor did not make it, then he gets no marks for it! This is particularly important when the overall outline is dependent upon the use of moulded major airframe components. The onus of proof of the manufacture of such components lies with the competitor and where commercially available parts have been used in the construction of the model, the "Scale Accuracy" marks, "Craftsmanship" marks and "Scale Detail" marks must be reduced accordingly.

If the competitor claims that the model is based on commercially available mouldings which he has modified to improve the scale accuracy, then unless these modifications are comprehensively documented, the marks awarded must reflect the origin of the mouldings.

1.3 Documentation

The model is judged by comparison with the proof of scale documentation presented and judges should only award marks based on the quality of this documentation. It follows therefore that if the documentation is missing or of poor quality then this must be reflected in the marks which can be awarded. The minimum documentation requirements are stated in paragraph 6.1.2.2 of the rules and the penalties for not providing this minimum are specified in paragraph 6.1.2.3 of the rules.

Paragraph 6.1.2.4 provides advice on how the documentation should be presented and good presentation should be rewarded, but there is more to 'quality of documentation' than how it is presented. Good presentation is no guarantee that it is fully comprehensive and Judges must ensure that a competitor does not benefit by default when the documentation is incomplete or of poor quality.

1.3.1 Photographs.

Photographs are the prime means of determining the outline accuracy, surface texture and realism of the model relative to the full size aircraft and must always take precedence over drawings if there is any doubt when assessing these aspects of static judging.

Photographs submitted as evidence of outline accuracy should show the complete aircraft. photographs should be in focus, with a good depth of focus and ideally free from distortion, e.g. proximity related distortion from being taken too close to the subject or perspective distortion resulting from the use of a wide angle lens.

Photographs showing the complete aircraft should also be of a reasonable size and the image size should not be less than 15cm wide. Photographs which provide evidence of scale details may be smaller but the location of the detail on the aircraft must be clearly marked.

With the ready availability of computerised photo editing software (e.g. Photoshop), Judges should be on their guard in order to spot photographs of the full size aircraft which may have been edited in order to hide errors on the model. Similarly judges must also be on the lookout for photographs of the model which have been edited to make the model appear to be the full size aircraft.

1.3.2 Scale Drawings.

The specification for drawings is defined in rule 6.1.2.2(a)(ii), but this only defines minimum dimensions. Line thickness is also important and drawings which show thick outlines is often an indication that the drawing has been enlarged from a small image and will be of dubious accuracy. The line thickness of a drawing should ideally be no greater than 0.5mm.

Judges should seek to verify the origin of the drawings and be particularly aware that being labelled an Aircraft Manufacturer's GA drawing is no guarantee of accuracy. If a 3-view drawing has been divided in order to show each view of the model with the associated photographs on the same card, Judges must ensure that unless each view has been certified the original three-view should be available as proof of certification.

1.3.3 Proof of Colour.

It is essential that if high marks are to be awarded, a comprehensive standard of colour documentation must be presented. Correct colour may be established from colour photographs; from published descriptions if accompanied by colour chips certified by competent authority; from samples of original paint; or from accepted published colour drawings.

Colour photographs however, can be unreliable since they can be reproduced in virtually any shade, furthermore the ambient light conditions (colour temperature and polarization) prevailing when the photographs were taken may not be the same as when the model is judged. E.g. photographs taken of the prototype illuminated with artificial light are not reliable proof of colour when the model is judged outdoors.

The optimum photographic proof of colour has to be a good quality photograph of the model and the subject aircraft posed together preferably taken outdoors or illuminated with the same balanced lighting. This ensures that any errors introduced by the photo reproduction process will be the same for the model and the full size aircraft.

Published colour chips and charts are acceptable when identified in a published written description, but judges should be suspicious when colour patches painted by the competitor are accompanied by a letter authorising authenticity, unless the patches themselves are identified and authorised by a competent authority. When the model is painted with the same paint used for the subject aircraft, the proof including batch details must be accompanied by certification from the owner of the full size aircraft. This in itself is no guarantee of colour accuracy even when the paint is from the same tin as used on the full size, because the finished colour is often influenced by what it is applied to and the surface material and preparation under the topcoat. Proof of colour must also indicate whether the finish is matt or gloss, or somewhere between.

1.3.4 Proof of Markings

The markings on an aeroplane identify that particular aeroplane from another of the same type (unless of course only one was built). Comprehensive evidence showing both sides of the subject as well as the upper and lower surfaces of the wings, can be difficult to obtain and whilst photographs of a similar aeroplane may be available, judges should only award high marks for aircraft markings if the documentation provides evidence of all the markings. All too often, whilst excellent photographs are provided for the aeroplane type, only one photograph shows the subject aeroplane and judges must not make assumptions that the markings are the same on each side of the aeroplane. As a guide, if only one side elevation of the subject is submitted as evidence of markings, and there is no indicative evidence to support the remainder of the markings, irrespective of how complex they are, no more than 2.5 marks should be awarded.

1.4 Assessment of the Model

Having first carefully examined the Competitor's Declaration and his Documentation, the judges can now commence assessment of the model and get some marks on the score sheet.

There are no rules governing the order in which the various aspects are marked but it is suggested that they are marked in the order they appear on the score sheet. In practice there is considerable overlap of these aspects, e.g. errors in outline are often revealed by the colour scheme and the markings or the positioning or omission of details.

Particular attention must be paid to models whose overall outline is dependent upon the use of moulded major airframe components. Unless it is obvious, or stated in the documentation, judges should question the competitor to determine precisely who is responsible for the accuracy of the moulding and marks can only be awarded for accuracy of outline when the judge is satisfied that the competitor did the work necessary to achieve it, e.g. when it can be proven that the competitor produced the plug and/or the mould.

1.4.1 Outline Accuracy

The model should first be positioned in a pose similar to that in the best photograph and checked for any obvious discrepancies. Photographs that are taken at an oblique angle can often give a false impression of dihedral and rigging angles and the drawings may provide a more accurate reference. This procedure is then repeated with other suitable photographs.

(a) Side view, for the fuselage outline, cabin or canopy shape (including significant internal structure where visible), cockpit aperture shape, engine cowling, propeller and spinner shape or rotor blade section and static droop (where applicable), outline of fin and rudder, wing and tailplane sections. Also the shape, angle and position of landing gear legs and nose/tail wheel or skid, the size of wheels and tyres. If applicable a check should be made of wing stagger, wing gap and the shape and arrangement of struts and rigging wires. Particular attention should be given to the aerofoil section and any changes of section along the wing. It will be necessary to examine both sides of the model because there are few aeroplanes where the port side is identical to the starboard side.

(b) Front-end view, for dihedral, wing thickness and taper, washout, wing struts, bracing and gap on multi-wing aircraft. Also the thickness of fin, rudder and tailplane, crosssections of fuselage and engine cowling, cowling shape and cut-outs, propeller size and blade shape or rotor blade section and static droop (where applicable), shape of cockpit canopy or windshields; size, shape, position and angle of landing gear, wheel track, tyre thickness.

(c) Plan view, for wing outline and fairings, aileron size, flaps; tailplane size and outline; elevator size, shape and cut outs, trim tabs, fuselage shape and taper, cockpit or canopy shape, engine cowling shape. It is usually necessary to also examine the underside of the model if there are features of the outline which are not clearly visible in any other view. The plan view assessment also provides the opportunity to check the accuracy and the position of the markings

1.4.2 Markings Accuracy

Check that the position and size of all markings are correct; that the style and thickness of all national markings, unit/serial/detail alpha-numeric characters, badges and logos are correct. Check that any trim strips or pin striping are of the correct dimensions and are correctly positioned. Check the layout of camouflage patterns.

Particular emphasis should be made to the relative positioning between markings and key features on the airframe as these often highlight errors in shape and outline and can be a good indication of scale accuracy. It cannot be assumed that the markings are the same on each side of the aeroplane and judges should only award high marks if the documentation provides evidence of all the markings.

1.4.3 Markings Complexity

Prior to commencing judging, the judges should agree the principle for awarding complexity points in relation to markings. A high mark for markings complexity is not solely dependent upon the number of markings, but the difficulty in achieving the required effect. Complex lettering, particularly when spread over a large area or relating to key positions on the airframe, should attract a higher complexity mark than sparsely positioned markings of more simple design. Curved lines are usually more complex than straight lines. Camouflage patterns should be considered carefully, with the more complex styles involving irregular patterns and indistinct edges being rewarded accordingly. For high marks to be given in this section it is also important that evidence is provided for all the markings.

1.4.4 Colour Accuracy

Judges should ensure that when judging colour accuracy, the documentation must be examined under the same ambient light conditions (colour temperature and polarization), as the model i.e. avoid placing the judges chairs in the shade or close to anything where reflected light may not be the same as the light on the model. Judges should also avoid wearing tinted or polarizing glasses.

When the evidence for colour accuracy is that the same batch of paint was used to paint the subject aircraft, it is unsafe to assume that the finished colours will be the same. Unless painted in very dark colours the nature of the surface material and the surface preparation (primer/undercoat) will affect the finished topcoat. The glossiness should also be checked.

Also check the colours used for markings, lettering and insignia including camouflage colour schemes and the correct degree of merging of the shades.

1.4.5 Colour Complexity

The system for awarding colour complexity points should be agreed before starting competitive judging. This should not be confined simply to the number of colours used, but also how they are distributed on the model i.e. the complexity of the boundary between colours and whether applied to flat or curved surfaces on fabric or solid surfaces etc. Camouflage patterns should be considered carefully, with the more complex styles involving irregular patterns and indistinct edges being rewarded accordingly.

Consideration should be given to the greater effort involved in reproducing multi-coloured finishes compared to models which feature only one or two basic colours. Up to two complexity points may be given for each main colour that covers a significant part of the airframe. A maximum of a single point may be given for each minor colour, such as those for the insignia, struts, guns, bombs etc. Basic colours of black and white should attract a fraction of a complexity point. It is again essential that if high marks are to be awarded, a comprehensive standard of colour documentation must be presented.

1.4.6 Surface Texture

The texture and appearance of the surface of the model should be a good scale reproduction of the subject aircraft and this is one aspect that is often not clearly documented; remember the judge cannot use his own knowledge or make assumptions, based on the subject aircraft type and when it was built.

Fabric covered surfaces should be covered in material which shows the coarseness of the weave to the correct scale. The edge treatment of the fabric including rib tapes must be as documented, i.e. frayed, pinked or straight. Rib stitching should show the correct or simulated knots and inspection panels should show the correct lacing. The underlying structure, stringers and wing ribs should also show the correct degree of prominence.

Ply covered or wooden monocoque structures should be correctly simulated and any sag between the ribs and formers should be apparent if this is present on the subject aircraft. Many aircraft which had plywood skinning were also covered with fabric and this should be correctly reproduced.

Metal stressed skin structures should show simulation of the correct type of riveting or fixing and removable panels should show simulation of the correct type of fastening.

In all instances the appropriate surface roughness and gloss or matt finish should be correctly reproduced.

1.4.7 Scale Realism

Realism is a question of how well the model captures the character of the subject aircraft. The judges should ask themselves if they are looking at the subject aircraft in miniature, or just a model aeroplane?

If the subject aircraft is an unblemished museum example then the model should be in similar pristine condition. If the subject aircraft is an operational aircraft then a degree of weathering and signs of regular use should be evident.

The quality of the documentation is of vital importance when assessing realism, and if the documentation does not contain a picture or a photograph that 'captures' the character of the prototype then this omission must be reflected in the marks awarded. The judge must be careful to avoid making assumptions based on the type of aeroplane.

1.4.8 Craftsmanship Quality

This is an assessment of the skill, ingenuity, general finesse and artistry involved in the construction and finish of the model and the principle to adopt here is that if it can be seen and is adequately documented then it can be assessed. Based on this principle, the competitor must be given the opportunity to show any features of the model which may not be immediately obvious. Access to features such as scale interior or scale structure if not visible in open cockpits must be by means of opening cockpit canopies, scale doors, hatches or wing folds etc.

Judges must consult the competitor's declaration to check for any components that are visible but have not been made by the competitor and any such items must be excluded from this assessment.

If the structural integrity of the model is dependent upon the visible use of commercially available prefabricated or engineered components, or major parts of the structure are commercially available mouldings, albeit masked by an excellent painted finish, the marks for craftsmanship must be significantly reduced.

Judges should also recognise that where components or moulds/plugs for components are produced using traditional methods, a greater level of craftsmanship is required than when CNC technology or 3D printing is used.

The model should be checked for the quality of workmanship, with particular reference to clean, sharp edges, especially trailing edges of wings and tail surfaces; correct gaps at hinge lines of control surfaces; the absence of warps in the structure; non-scale ripples in flat surfaces and inadequately filled wood grain.

Any visible non-scale items such as switches, needle valves, silencers, exhaust pipes, fuel hose, control horns, etc. with the exception of "take-off aids" (Rule 6.1.1.19 refers), must result in a loss of marks.

Non-scale joints or fixings necessary for dismantling the model and non-scale hatches or access panels used for model operation should be unobtrusive.

1.4.9 Craftsmanship Complexity

Judges should consider the overall complexity of the design awarding higher marks for more intricate shapes and structure.

Judges should also consider the variety of construction techniques and processes used in the design of the subject aircraft and whether or not these have been accurately replicated or simulated.

It is important to separate complexity from repetition and to recognize that compound curves are more difficult to reproduce than straight line or flat structures.

Special items of ingenuity and any demonstrations of functionality other than normal control function; e.g. hinged engine covers, sliding canopies, folding wings, etc. may also be rewarded under this section. The Contest Director or Organiser must allow the Competitor to use his transmitter if required to demonstrate these features.

Judges must consult the competitor's declaration and check for any components that have not been made by the competitor and adjust the marks awarded accordingly.

The marks that are awarded must again reflect the standard of documentation presented.

1.4.10 Scale Detail Accuracy

The documentation presented should clearly show the details that are being assessed. The marks awarded should reflect both the accuracy and the quantity of scale detail present. Judges should take care to verify that the competitor has not omitted details which are clearly visible in the documentation.

Particular attention should be paid to dummy engines and those parts of engines visible inside air intakes, air vents and around exhaust pipes and jet nozzles.

Check that items such as those listed below are present on the model where applicable, and that they are well documented, accurately reproduced and correctly positioned.

Hatches	Brake pipes
Handles	Landing gear springing
Footsteps	Tyre treads
Doors	Wing slots
Armament	Navigation and landing lights
Bombracks	Pitot head
Control cables	Walkways
Control horns	Tanks
Fairings	Radiators
Bracing	Filler caps
Turnbuckles	Louvres
Struts	Cooling gills
Lacing or stitching	Mass balances
Aerials	Instrument panel
Venturis	Cockpit or cabin interior detail

1.4.11 Scale Detail Complexity

Again Judges must consult the competitor's declaration to check for any components that have not been made by the competitor and any such items must be excluded from this assessment.

A well-documented highly detailed model should score proportionately more than a model with little detail, even if the subject aircraft is itself sparsely detailed.

Judges should ensure when marking this aspect that they are relating to the complexity of detail actually on the model, not awarding marks for the complexity of the subject aircraft.

1.5 Final Assessment

When all the models have been individually judged the spread of marking for all the models should be reviewed, particularly the complexity marks awarded. This is to ensure that these marks accurately reflect the spread of complexity across all the models entered. The relative mark of one model compared with the others is important and to ensure this is achieved, the marks can be altered retrospectively. The use of a summary sheet for this review is recommended.

6.4.7 SCALE INDOOR FREE FLIGHT (Rubber Powered)

6.4.7.1 General Characteristics

Maximum weight..... 250g (including motor)
Maximum wing loading 15 g / dm²
Motive Power.....extensible motors (rubber) only

6.4.7.2 Definition of an Official Flight

An official flight shall be recorded when the competitor releases the model with the intention of making an official flight. The model must remain airborne for at least 15 seconds for the flight to be judged and a flight score returned.

6.4.7.3 Number of Flights

Each competitor should have the opportunity to make a minimum of four flights.

6.4.7.4. Flying Time

A minimum period of 15 minutes shall be allocated for trimming before the competition begins and the competitor must be called five minutes before he/she is required to occupy the starting area. Failure to comply will result in the loss of the flight. The model will be released, after notifying the flight judges, within a period of 3 minutes, plus one minute for each additional motor. Only one release is permitted during the allocated time.

6.4.7.5 Flight

(a) TakeoffK = 15
(b) Initial Climb.....K = 12
(c) Descent and landing approach.....K = 19
(d) Quality of landing.....K = 17
(e) Realism in flight.....K = 37
Total K = 100

6.4.7.6 Complexity Bonus

The flight score shall be subject to a complexity bonus as listed in the following schedule. All bonuses are additive.

Engines (on different thrust lines)..... Bonus
Single 0
Two or more engines..... 10%

Note - To qualify for the multiengine bonus each propeller must be driven by a separate engine unless this was not the case with the subject aircraft modelled. The engines must deliver similar levels of power.

Undercarriage
Fixed (any configuration)..... 0
Retracts in flight..... 10%
Lowers in flight 10%

6.4.7.7 Marking and Scoring

Each flight judge awards marks out of 10 for each part of the flight, as defined in 6.4.5.5. These marks are then multiplied by the appropriate K factor and aggregated before the bonuses are applied as described in 6.4.5.6. The aggregate sum of the individual judges scores including the bonuses is the Total Flight Score.

The Final score is the sum of the Total Static Score and the best Total Flight Score.

6.4.8 SCALE INDOOR FREE FLIGHT (CO₂ or Electric Powered)

6.4.8.1 General Characteristics

Maximum weight (no fuel but including cells or tanks) 250g
Maximum wing loading 15 g / dm²
Motive Power:
 (a) CO₂ motors
 (b) Electric motors (battery to be carried in model)

6.4.8.2 Definition of an Official Flight

An official flight shall be recorded when the competitor releases the model with the intention of making an official flight. The model must remain airborne for at least 15 seconds for the flight to be judged and a flight score returned.

6.4.8.3 Number of Flights

Each competitor should have the opportunity to make a minimum of four flights.

6.4.8.4 Flying Time

A minimum period of 15 minutes shall be allocated for trimming before the competition begins and the competitor must be called five minutes before he/she is required to occupy the starting area. Failure to comply will result in the loss of the flight. The model will be released, after notifying the flight judges, within a period of 3 minutes, plus one minute for each additional motor. Only one release is permitted during the allocated time.

6.4.8.5 Flight

(a) Takeoff.....K = 15
(b) Initial Climb.....K = 12
(c) Descent and landing approach.....K = 19
(d) Quality of landing.....K = 17
(e) Realism in flight.....K = 37
Total K = 100

6.4.8.6 Complexity Bonus

The flight score shall be subject to a complexity bonus as listed in the following schedule. All bonuses are additive.

Engines (on different thrust lines).....	Bonus
Single	0
Two or more engines.....	10%

Note: To qualify for the multiengine bonus each propeller must be driven by a separate engine unless this was not the case with the subject aircraft modelled. The engines must deliver similar levels of power.

Undercarriage	
Fixed (any configuration).....	0
Retracts in flight.....	10%
Lowers in flight	10%

6.4.8.7 Marking and Scoring

Each flight judge awards marks out of 10 for each part of the flight, as defined in 6.4.8.5. These marks are then multiplied by the appropriate K factor and aggregated before the bonuses are applied as described in 6.4.8.6. The aggregate sum of the individual judges scores including the bonuses is the Total Flight Score.

The Final score is the sum of the Total Static Score and the best Total Flight Score.

6.4.9 SCALE PEANUT

6.4.9.1 Qualification

Open to any scale free flight rubber powered model of either not more than 13" span or not more than 9" overall length excluding propeller.

6.4.9.2 Documentation

The minimum documentation is to be one of the following:

(a) A general arrangement drawing of at least 2 inches wing span, plus one photograph or printed reproduction of the full sized aircraft. If the photograph or printed reproduction is not in colour, then an authentic written colour description must be included.

(b) A coloured 3-view (e.g. 'Profile' publication) to a minimum of 1/144 scale. The competitor must also state in the documentation, the type of covering material used on the model.

6.4.9.3 Flying Section

Each competitor is allowed up to 9 official flights. An official flight is counted each time the model is released for a declared flight. The times of the longest 2 flights (each rounded down to the nearest second) will be aggregated to form the competitor's flight score. Flights may be hand launched or from Take-off. If Take-off is successfully achieved, without pushing or similar assistance, then 10 seconds will be added to the flight time recorded.

6.4.9.4 Static Judging/Appearance

The General Static Judging rules (section 6.1.2) do not apply to Scale Peanut Models will be judged visually, in comparison with the documentation provided, by one or more judges. No scale measurements will be taken and there is no restriction to static judging distance. Marks will be awarded as follows:

(a) Workmanship, marked on merit	0 - 15
(b) Complexity and accuracy of colour and markings.....	0 - 10
(c) Authentic details.....	0 - 5
(d) Flying surfaces	
All double surface	4
Double surface wing but single surface tail.....	2
Single surface	0
Note: If the full size aircraft was single surface, then the model should be likewise single surface and be awarded the full 4 points.	
(e) Surface	
Finish Authentic Colour	5 - 9
Unpainted coloured tissue.....	4
Unpainted condenser paper.....	3
Clear film.....	0
(f) Landing gear	
Scale length	3
Slightly enlarged	2
Greatly enlarged or no documentation.....	1
None or retracted	0
(g) Dihedral	
Scale	3
Slightly exaggerated	1
Grossly exaggerated or no documentation	0
(h) Empennage	0 - 3
(i) Bonus points for complexity	
Low wing	9
Biplane	9
Triplane	15
Autogyro.....	21
Helicopter.....	27
Flying boat or floatplane.....	9
Scale number of wing ribs.....	2 per wing
Scale number of tailplane ribs.....	1
Scale number of rudder ribs.....	1/2
Separate control surface.....	½ each
Other than square fuselage	1
Wheel pants or spats	1
Three dimensional pilot.....	1
Exposed engine	1

- (j) Negative points for deviation from scale to assist flying performance
 - Lengthening of nose or tail moment.....2 each
 - Moving wing back 2
 - Simplifying fuselage cross-section or outline 2
 - Enlarging rudder 2
 - All other non-scale performance aids.....2 each

Competitor's appearance score will be the sum of the marks awarded in 6.4.9.4(a) through to 6.4.9.4.(i) less the points awarded in 6.4.9.4.(j).

6.4.9.5 Scoring

The order of marking in 6.4.9.3 and 6.4.9.4 will produce a 'place' in the Flying and Appearance sections respectively. Each contestants numerical 'places' in the two sections are added. The lowest overall totals then determine the final overall placings in the competition.

In the event of a tie, final overall places shall be determined by referring to the appearance score, followed if necessary by reference to the flight scores, comparing first flights, then second flights. If there is still a tie, the places will be decided by a duration fly off.

Models that do not record an official flight time will not qualify for a placing in the competition.

6.4.10 SCALE PISTACHIO

6.4.10.1 Qualification

Open to any scale free flight rubber powered model of either not more than 8" span or not more than 6" overall length excluding propeller.

6.4.10.2 Documentation

The minimum documentation is to be one of the following:

(a) A general arrangement drawing of at least 2 inches wing span, plus one photograph or printed reproduction of the full sized aircraft. If the photograph or printed reproduction is not in colour, then an authentic written colour description must be included.

(b) A coloured 3-view (e.g. 'Profile' publication) to a minimum of 1/144 scale. The competitor must also state in the documentation, the type of covering material used on the model."

6.4.10.3 Flying

Each competitor is allowed up to nine official flights. An official flight is counted each time the model is released for a declared flight. There is no bonus for a successful RoG. The times of the longest two flights (each rounded down to the nearest second) will be aggregated to form the competitor's flight score.

6.4.10.4 Static Judging/Appearance

The General Static Judging rules (section 6.1.2) do not apply to Scale Pistachio Models will be judged visually, in comparison with the documentation provided, by one or more judges. No scale measurements will be taken and there is no restriction to static judging distance. Marks will be awarded as follows:

(a) Workmanship	0-10
(b) Complexity and authenticity of colour and markings.....	0 - 5
(c) Authentic details.....	0 - 3
(d) Scale dihedral.....	0 - 2
(e) Scale empennage/foreplane	0 - 2
(f) Surface finish (no penalty for single surface)	0 - 5
(g) Complexity	
Low wing	4
Biplane	4
Triplane (or more)	7
More than one powered propeller	3
Floats	2
Helicopter/autogyro.....	5
For each flying surface with separate controls.....	1 each
Fuselage cross-section	0 - 3
Pilot	0 - 2
Exposed engine	0 - 2
Wheel spats/pants	1
Rigging or flying wires.....	0 - 3
(h) Deviations to aid flying performance	minus 2 each

Competitor's appearance score will be the sum of the marks awarded in 6.4.10.4(a) through to 6.4.10.4.(g) less 6.4.10.4(h).

6.4.10.5 Scoring

The order of marking in 6.4.10.3 and 6.4.10.4 will produce a 'place' in the Flying and Appearance sections respectively. Each contestant's numerical 'places' in the two sections are added. The lowest overall totals then determine the final overall placing in the competition.

In the event of a tie, final overall places shall be determined by referring to the appearance score, followed if necessary by reference to the flight scores, comparing first flights, then second flights. If there is still a tie, the places will be decided by a duration fly off.

Models that do not record an official flight time will not qualify for a placing in the competition.

6.4.11 SCALE INDOOR KIT SCALE

6.4.11.1 Qualification

This competition is open to any scale model built from a commercial kit that meets the following general characteristics:

Maximum weight..... 250g (including motor)
Maximum wing loading 15g/dm²
Motive Power.....rubber, CO₂ or electric

Models of gliders are approved for this competition, they may be launched in any manner appropriate to the subject aircraft modelled. A single helper is permitted to assist with the launch.

No declaration as to compliance is required from the competitor but the judges reserve the right to weigh and exclude any model they suspect of being overweight.

Models may be built from kit parts or the builder's own wood but the kit plan must be provided as authentication.

Alternative material to that provided in the kit may be used for covering and for the application of colour and markings.

The only modifications permitted from the original kit are those associated with fitting an alternative power source, a replacement propeller (including for rubber), wheels and moving the rear motor peg for rubber powered models.

6.4.11.2 Documentation

The minimum documentation required is the original (or photocopy) plan from which the model was built and one photograph, drawing or painting (e.g. box art) of either the aircraft modelled or a similar aircraft from the same era to authenticate the general colour scheme and markings.

6.4.11.3 Static Judging

The philosophy is different from other scale classes in that models are judged against authenticity and accuracy to the kit plan rather than absolute accuracy to photographs and 3 views.

Marks will be awarded up to the maximum of 100 to reflect the quality of workmanship and character of the models as follows:

- (a) Workmanship (finesse, accuracy to plan, warps, neatness of covering etc)...(60%)
- (b) Authenticity of Colour Scheme & Accuracy of Markings (if present) (20%)
- (c) Overall Character(20%)

It is expected that most models will have a coloured tissue finish with painted, printed, transfer or tissue markings. Fully painted models or those using extensive computer generated colour schemes will not be excluded but will have 5 marks deducted from their static score. 5 marks will also be deducted for each significant deviation from the original design other than those permitted above, or specified on the plan. (Typical deductions include: increased dihedral, separate control surfaces where these are not shown on the plan etc)

6.4.11.4 Definition of an Official Flight

An official flight shall be recorded when the competitor releases the model with the intention of making an official flight. The model must remain airborne for at least 10 seconds for the flight to be judged and a flight score returned.

6.4.11.5 Number of Flights

Each competitor should have the opportunity to make a minimum of 4 flights, unless there are more than 30 entries in which case it may be necessary to reduce this to 3 flights.

6.4.11.6 Flying Time

A minimum period of 15 minutes shall be allocated for trimming before the competition begins. Thereafter, each competitor shall be called five minutes before he/she is required to occupy the starting area. The model shall be released, after confirming that the flight judges are ready, within a period of 3 minutes, plus one minute for each additional motor. Failure to comply will result in the loss of the flight. Only one release is permitted during the allocated time.

6.4.11.7 Marking

Each phase of the flight will be awarded marks between 0 and 10 by each judge during the flight as follows:

- (a) Take-off K = 1
- (b) Initial Climb.....K = 1
- (c) Descent and Landing Approach.....K = 1
- (d) Quality of LandingK = 1
- (e) Realism in Flight (speed, 'sit', stability and character)K = 1

6.4.11.8 Flight Score

The flight score will be the aggregate of the 2 highest scores awarded by each of 2 judges. If only one flight judge is available, the flight scores will be doubled.

If fewer than 3 rounds are flown, the flight score will be twice the highest single flight score awarded by each of the two judges.

6.4.11.9 Total Score

The total score will be the aggregate of the static mark and flight score (Maximum 340). In the event of a tie, the model with the higher flight score will take the higher place.

SCALE PROFILE

1 Specification

- (a) The model should be a recognisable model of a full sized aircraft, with a wingspan not exceeding 16 inches.
- (b) Minimum airframe weight without rubber 6.0 g
- (c) Balsa wood and jap-tissue shall be the main construction materials. The use of hi-tech materials such as boron, carbon fibre etc. is not permitted.
- (d) The model must have control surface outlines, window outline and registration markings as per the modelled full sized aircraft.
- (e) The model must have the full landing gear as per the full sized aircraft. No profile gear is allowed. Models of aircraft with retractable gear may be depicted with the gear retracted.
- (f) No mechanical means of varying the propeller pitch or wing incidence are permitted.

2 Flights

The competitor shall be allowed 6 flights of which the two best flights will be taken for classification.

3.4. CLASS F1D – FF INDOOR AIRCRAFT

3.4.1. Definition

Model aircraft which can only be flown in an enclosed space and which are powered by extensible motors and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed in flight, except for changes of camber or incidence.

3.4.2. Characteristics of Indoor Model Aircraft F1D

Maximum wingspan of the monoplane model.....550 mm,
Maximum chord of the lifting surfaces200 mm
Maximum tail span450 mm,
Minimum weight without rubber motor1.4 g,
Maximum weight of the lubricated rubber motor0.4 g.
The competitor must be the builder of the models entered.

3.4.3. Number of Flights

The competitor shall be allowed 6 flights of which the best 2 flights will be taken for classification. If the organisers specify rounds for the competition then the competitor is entitled to one official flight in each round. The duration of rounds must be announced in advance.

3.4.4. Definition of an Official Flight

Only flights of 60 seconds or more will be considered as official. A flight may be terminated by any physical means within the first 60 seconds. A flight of less than 60 seconds duration will be considered an attempt and there will be one attempt flight allowed for each of the six official flights; the attempts will not be accumulative.

3.4.5. Number of Model

There is no limit to the number of model that a competitor may use at an indoor contest.

3.4.6. Collision Rule

In the event of a collision between two models in flight, each competitor must choose, in the time span between the collision and two minutes following the termination of his flight, either to retain the time of flight as an official time, or to have a reflight. A competitor has the right to a reflight even if the round time has expired when the collision occurs. The reflight must be flown before his next official flight. In the case of the last round of the competition, when there are no more official flights, the launch of a reflight should take place within one hour of the end of the round.

3.4.7. Steering

a) A balloon(s) with its line attached, or a rod, may be used to alter the course of the model, or to reposition it in another part of the flying space. There will be no time limit or restriction to the number of steering attempts, except that all steering shall be done from the front end of the model and never from behind.

b) Steering must only be used to avert collision with the structure of the building, its contents or other models. Movements of the model must be primarily in a horizontal plane

Note: If, in a timekeeper's opinion, a model's altitude change is approaching one half metre, or one metre for each 25 m of altitude (whichever is larger) he will warn the competitor. Continued disregard of the timekeeper's warning will result in a terminated flight.

c) During steering the propeller may get caught by the line/balloon(s)/rod and stop revolving. As soon as the propeller stops, a third watch should be used (preferably a double button watch, that records accumulative time) to determine the total of propeller stopped time, which is deducted from the running total time shown on the other two watches. If the steerer cannot disengage the propeller after steering, all three watches are to be stopped together, and the total prop-stopped time deducted as is detailed above.

d) No reflight is allowed other than if fouled by another model during steering.

e) The decision to steer is the responsibility of the competitor and must be done by him. A physically handicapped competitor must arrange for a substitute with the contest officials. In the case of poor sight, a medical doctor's affidavit certifying that the competitor's vision is inadequate can be submitted under the following conditions:

i) The better eye's vision is no less than 6/12 (metres). or

ii) The results of a binocular vision test show that the competitor's binocular vision is either medium or non-existent. Submission of this affidavit to the contest organiser or event director will permit the competitor to appoint a substitute steerer.

f) It is the timekeeper's responsibility to observe the use of the steering equipment, and to warn the competitor if he is likely to endanger other models. If other models are fouled by the steerer, the fouled competitor has the choice of a reflight, which, if taken, is his score for that round. He must exercise his choice to the timekeepers no later than two minutes after termination of his flight. If he chooses to restart, he must do so before his next official flight.

3.4.8. Classification

The total of two best flights of each competitor shall be taken for final classification. In the case of a tie the third best flight decides and so on in the case of a further tie.

3.4.9. Timing of Flights

The flights must be timed by two timekeepers with electronic stopwatches with digital readout recording at least 1/100 of a second.

From F1.2, only F1.2.1, F1.2.2, and F1.2.6. apply to class F1D.

The timing of each flight shall commence when the model is released. Timing will terminate when:

a) the model touches the floor of the building.

b) jettisoning occurs.

c) the model comes into contact with any part of the building or its contents other than the floor and translational movement ceases.

Note: In this case, the timekeepers shall continue to time for ten seconds after translational movement has ceased. Should the model remain in contact with the building or its contents after 10 seconds, timing will cease and the 10 seconds will be subtracted from the flight time. Should the model release itself from contact with the building in less than 10 seconds, timing will continue normally.

3.4.10. Number of Helpers

The competitor is entitled to have one helper.

3.4.11. Launching

- a) Launching is by hand, the competitor standing on the ground.
- b) Winding of rubber motors must be done by the competitor himself.

3.4.12. Ceiling Height Categories

The following ceiling height categories are recognised for contests and records:

- I. - less than 8 metres.
- II. - between 8 and 15 metres.
- III. - between 15 and 30 metres.
- IV. - higher than 30 metres.

The height of the ceiling is defined as the vertical distance from the floor to the highest point at which a circle of 15 metres diameter can be inscribed, below the primary structure of the building.

3.7 CLASS F1N – FF INDOOR HAND LAUNCH GLIDERS

3.7.1 Definition

Model aircraft which is flown in an enclosed space and which is not provided with a propulsion device and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed in flight.

3.7.2. Characteristics

Models with variable area (e.g. folding wings) are not permitted. The number of models eligible for entry by each competitor is three. The competitor must be the builder of the models entered.

3.7.3. Number of Flights

The competitor shall be allowed 9 flights.

3.7.4. Definition of an Official Flight

- a) The duration achieved on the first attempt unless this attempt is unsuccessful under the definition of 3.7.5.
- b) The duration achieved on the second attempt. If the second attempt is also unsuccessful under the definition of 3.7.5, then a zero time is recorded for the flight.

3.7.5. Definition of an Unsuccessful Attempt

An attempt is classed as unsuccessful if the model is launched and at least one of the following events occurs: If this happens on the first attempt then the competitor is entitled to a second attempt.

- a) The model collides with a person or an object held by a person (the competitor excluded);
- b) The model collides with another model in flight;
- c) It is apparent to the timekeepers that a part of the model becomes detached during the launch or during the official flight time.

3.7.6. Timing of Flights

The flights must be timed by two timekeepers with electronic stopwatches with digital readouts. The time recorded is the mean of the times registered by the timekeepers, but reduced to the nearest one tenth of a second below the resulting mean time, unless the difference between the times registered shows evidence of an error in the timing, in which case the organiser should determine, with the Jury, which time should be registered as the official time or what other action should be taken.

From F1.2, only F1.2.1 and F1.2.2 apply to class F1N.

The timing of each flight shall commence when the model is launched. Timing will terminate when:

- a) the model comes to rest on the floor of the building.
- b) the model comes into contact with any part of the building or its contents other than the floor and translational movement ceases.

3.7.7. Classification

The total of the three best flights of each competitor shall be taken for the final classification. In the case of a tie the fourth best flight decides and so on in the case of a further tie.

3.7.8. Launching

Launching is by hand, the competitor standing on the ground. Jumping is allowed. The requirement in 1.3.1 of Section 4C that models must be launched with one hand holding the fuselage does not apply to F1N.

3.7.9. Ceiling Height Categories

The following ceiling height categories are recognised for contests and records:

- I- less than 8 metres
- II- between 8 and 15 metres
- III- between 15 and 30 metres Class
- IV- higher than 30 meters

The height of the ceiling is defined as the vertical distance from the floor to the highest point at which a circle of 15 metres diameter can be inscribed, below the primary structure of the building.

3.L CLASS F1L – FF INDOOR AIRCRAFT EZB

3.L.1. Definition

Monoplane model aircraft powered by one (1) extensible motor, and in which lift is generated by aerodynamic forces acting on fixed surfaces.

3.L.2. Characteristics

Wingspan, maximum projected457.2 mm
Wing chord maximum76.2 mm
Stabiliser area maximum50% of wing

a) Structure

- 1) Only balsa wood and adhesive are to be used for the basic structure. Exempted are the propeller shaft, rear hook, thrust bearing, surface holding fittings and reinforcements for their attachments. No external bracing is allowed except balsa wood wing struts.
- 2) The motor stick must be a solid single piece of balsa. The tail boom must also be solid and of one piece but may be an extension of the motor stick. Balsa splices up to one centimetre in length may be used to repair breaks in the motor stick or boom.
- 3) The propeller must be all balsa except for ground adjustable pitch fittings, if used.
- 4) There are to be no devices for changing any part of the model's geometry or torque during flight. Only the normal flexing of the structure due to flight loads or motor forces is allowed.

b) Covering

- 1) Models are to be covered with any commercially available solid sheet material such as paper or plastic.
- 2) Microfilm is not allowed.

c) Weight

Weight of the model without rubber motor shall not be less than 1.2 g. The competitor must be the builder of the models entered.

3.L.3. Number of Flights

The competitor shall be allowed 6 flights of which the two best flights will be taken for classification.

3.L.4 Definition of an Official Flight

See 3.4.4.

3.L.5. Number of Models

See 3.4.5.

3.L.6. Collision Rule

See 3.4.6.

3.L.7. Steering

See 3.4.7.

3.L.8. Timing of Flights

See 3.4.9.

3.L.9. Number of Helpers

See 3.4.10.

3.L.10 Launching

See 3.4.11.

3.L.11 Ceiling Height Categories

See 3.4.12.

3.M CLASS F1M – FF INDOOR BEGINNER’S AIRCRAFT

3.M.1. Definition

As 3.4.1 plus:

3.M.2. Characteristics of Indoor Model Aircraft

The wing span of the model shall not exceed 460 mm, monoplanes only permitted. The minimum weight of the airframe is 3g. The maximum weight of the rubber motor shall not exceed 1.5g. The covering of the model may consist of any material except microfilm.

The competitor must be the builder of the models entered.

3.M.3. Number of flights

See 3.4.3.

3.M.4 Definition of an Official Flight

Only flights of 60 seconds or more will be considered as official. A flight of less than 60 seconds duration will be considered a delayed flight and there will be one delayed flight allowed for each of the six official flights; the delayed flights will not be accumulative.

3.M.5. Number of Models

See 3.4.5.

3.M.6. Collision Rule

See 3.4.6.

3.M.7. Steering

See 3.4.7.

3.M.8. Classification

See 3.4.8.

3.M.9. Timing of Flights

See 3.4.9.

3.M.10. Number of Helpers

See 3.4.10.

3.M.11. Launching

See 3.4.11.

3.M.12. Ceiling Height Categories

See 3.4.12.

Sainte Formula Rules

Definition:

Model aircraft designed to be flown in an enclosed space and which are powered by rubber motors enclosed in the fuselage, and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed in flight, except for changes of camber or incidence.

Characteristics of Indoor Model Aircraft Sainte Formula

Maximum projected wingspan	330 mm
Maximum chord of the lifting surfaces, monoplane*	80 mm
Maximum tail span	150 mm
Maximum chord of the tail surfaces.....	60 mm
Maximum propeller diameter	150 mm
Maximum propeller blade width	25 mm
Minimum weight without rubber motor**	3 g

* Biplanes are permitted if the sum of the chords is maximum 100 mm, the minimum chord for each wing is 40 mm.

** Minimum weight for the Netherlands

The **rubber motor** is enclosed in the fuselage, gears are not allowed. Motor length and cross section are not limited.

The **fuselage** has a minimum cross section of 30 x 40 mm over at least 50 mm of its length. The fuse is covered at both sides, upperside and lower side. The fuselage must have a transparent windshield or canopy with a frontal and side area of at least 2 cm².

The **covering** of the model may consist of any material except microfilm.

The **landing gear** consists of 2 legs with freely rotating wheels with a minimum diameter of 18 mm.

Number of flights

The competitor shall be allowed 6 flights of which at least 2 are Rise Of Ground (ROG)
The best 2 flights, of which at least one ROG, will be taken for classification.

Definition of an Official Flight

Only flights of 10 seconds or more will be considered as official. A flight of less than 10 seconds duration will be considered a delayed flight.

Glider Scale

This class is meant as a fun intermezzo during the meeting on the different days. Each day will have a different task to fly. The class can be flown by anyone old/young, beginner/advanced builder because of the profile models and accessible static judging.

1. General characteristics:

Maximum wingspan.....80 cm
Motive Power.....hand* launch or towline/winch launch

2. Model characteristics:

2.1 All models need to be based on a real airplane, proof of the real plane need to be given via photo's or written documentation. For early pioneer planes (like DaVinci style planes) a copy of a rendering or design sketch is also allowed.

2.2 The number of models; only one model can be used during the event. This means one needs to build a model that need to be used in all the flight tasks. The rule of a second model when the first model becomes heavily damaged also applies.

2.3 Profile scale models are allowed (<3 year experience) but still need to have markings etc as per original which it is based on. There will be a separate ranking for profile and "3d" scale models. For example a F1N style model is not allowed.

2.3.1 For newcomers (<1 year experience) and juniors a profile scale model with an outline resembling a real plane and custom paint is also allowed. As long as it glides and has no other motive power as per original.

2.4 Carbon fiber is only allowed to strengthen the model at critical points. Carbon tubes for attaching wings etc. are also allowed. Full carbon (tube) spars, trailing edge, leading edge, etc. are not allowed. No other high-tech materials are allowed.

2.5 Builders/flyers with more than 3 years' experience with (scale models) are excluded from the use of profile scale models. This is to level the playing field a bit more between beginner and experts.

2.6 Within the "3d" scale models the flyer can also use a towline/winch to launch their model. To keep the profile scale simple for beginners this is not allowed for those models.

3. Number of flights

Per flight task the competitor has the right to that amount of flights given in chapter 5A – 5D

**hand launching is done by pushing the model out of your hand. Throwing towards the ceiling or gaining a lot of height in any other way is prohibited*

4. Motive power

All launching will be done by hand* or by a towline/winch. A flyer can switch between both methods during the rounds. Motorized help (e.g. condenser engines, rubber, CO2 etc.) is not allowed. No bungee launches.

5. Flight tasks

Per contest day a flight task is selected. There will be no flight judging (except for task D). There will be a flight referee to check if the model used looks like a real airplane (markings, shape etc.). Depending on the task there will be an X amount of attempts per flyer. Per flight task we will have a ranking, the total of these rankings will make a final ranking. The rule that the use of a second model is allowed when the first model becomes heavily damaged, also applies.

A. Flight duration and static judging

- On the public gallery there will be a starting area. Within that area the flyer has to launch his model. This will be done by hand*. Using chairs or the bleachers is not allowed for safety.
- A flyer can also use a towline/winch to launch their model, except for profile scale models.
- Timing will start when the model comes off the towline.
- The flight time will be monitored by the referee. If the model hits an object or the walls of the hall, the timing will stop.
- The flyer will get 2 to 4 attempts (depending on time) for the flights.
- The best flight is used for the ranking. The best flyer gets one point, second two, etc.
- Static judging is done by two judges. The concept is that all the models are put on a table and ranked from 1 to ... (insert amount of flyers). The criteria for the ranking is up to the judges. The best static gets one point, second two, etc.
- The total ranking is the amount of points scored accumulated.

B. Target distance landing

- On the public gallery there will be a starting area. Within that area the flyer has to launch his model. This will be done by hand*. Using chairs or the bleachers is not allowed for safety.
- The model has to fly as far as possible and land within an outlined landing zone.
- Hitting the wall at the end (within the outlined landing zone) gives a win and so one point. When multiple models hit this wall, those models will also get one point (for example: 2 models hit the wall, both will get one point, the first model furthest will then get 3 points, etc.)
- When the model lands it will stay where it sits until all the flyers had their attempt.

- The referee will then score the flights by reviewing who flew the furthest, while staying within the bounds of the landing zone.
- The flyer with the longest distance will get one point, the second two, etc.
- The total score of maximum 6 flights per flyer gives the end ranking.
- The flyer with the lowest amount of points wins.
- This may be done in teams with the same model, each flyer will then get 3 flights.

**hand launching is done by pushing the model out of your hand. Throwing towards the ceiling or gaining a lot of height in any other way is prohibited*

C. Mass launch (all up last down) (does not count for final end ranking)

- All the flyers will launch at the same time.
- The flyer whose model is landing as last, wins the round.
- Profile and "3d" models will fly separate if needed.
- There will be 1 round.
- The winning flyer will receive a small prize.

D. Best flight on a towline (does not count for final end ranking)

- Each flyer can have 4 starts on a towline.
- Each flight (start/glide/landing) will be given points, this will be a score from 0-10
- The best 2 flightscores per flyer makes the ranking.
- The flyer with the highest amount of points wins and receives a small prize.

After all the flight tasks (except for task C & D) the rankings of the tasks will be used to make a final end ranking for the prizes.

The end ranking will made as follows.

- The winner of an event/task will get one point, the second two, etc.
- The flyer with the least points is the overall winner.

Appendix I

In this appendix some important information about the competition can be found in a short summary

Timekeeping:

Timekeeping will be done in accordance with the FAI rules.

For F1D, F1L, F1M, Sainte Formula and Profile Scale all flight times will be rounded to the nearest second. .5 seconds will be rounded up

For F1N all times are rounded to the nearest 1/10th of a second.

For F4F and pistachio all the times will be rounded down to the nearest second.

Local rule: We will use one timekeeper. For official national and international records the flyer is responsible for a second timekeeper.

Amount of models:

For scale we accept a maximum of 1 models per class. For F4E, 1 CO2 models or 1 Electric models, or 1 CO2 and 1 Electric model. In the case we are having too many entries for a class this can/will be changed to 1 model per class.

For duration we follow the FAI rules.

Prizegiving:

All first three flyers in each class will receive a prize

Dutch Championships:

During the IIFI, the flyers that are residents of The Netherlands, get a chance to become Dutch Champion in four classes F1D, F1M, F1N and F4F. Conditions to compete are:

Flyer needs to be a member of the KNVVL.

Flyer needs to present a (FAI) license given by the KNVVL for the current year.

Flyer needs to be a resident of the Netherlands.

We need at least 5 Dutch flyers per class.

Local rule: There will be no difference between Junior and Senior flyers for the Dutch Championships.

!!!!International competitors don't need a FAI license to compete at the IIFI!!!!