



# FAI Sporting Code

*Fédération  
Aéronautique  
Internationale*

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## Section 4 – Aeromodelling

# Volume F1 Free Flight Model Aircraft

2024 Edition

Version 2

Version 2 effective 15th June 2024

- F1A – GLIDERS
- F1B – MODEL AIRCRAFT WITH EXTENSIBLE MOTORS « WAKEFIELD »
- F1C – POWER MODEL AIRCRAFT
- F1D – INDOOR MODEL AIRCRAFT
- F1E – GLIDERS WITH AUTOMATIC STEERING
- F1N – INDOOR HAND LAUNCH GLIDERS
- F1P – POWER MODEL AIRCRAFT
- F1Q – ELECTRIC POWER MODEL AIRCRAFT
- F1G – MODEL AIRCRAFT WITH EXTENSIBLE MOTORS « COUPE D'HIVER » (Provisional)
- F1H – GLIDERS (Provisional)
- F1J – POWER MODEL AIRCRAFT (Provisional)
- F1K – MODEL AIRCRAFT WITH CO<sub>2</sub> MOTORS (Provisional)
- F1L – INDOOR EZB MODEL AIRCRAFT (Provisional)
- F1M – INDOOR MODEL AIRCRAFT (Provisional)
- F1R – INDOOR MODEL AIRCRAFT "MICRO 35" (Provisional)
- F1S – SMALL ELECTRIC POWER MODEL AIRCRAFT «E36» (Provisional)
- ANNEX 1 - RULES FOR WORLD CUP EVENTS
- ANNEX 2 - A GUIDE FOR ORGANISERS OF CONTESTS FOR OUTDOOR FREE FLIGHT CLASSES
- ANNEX 3 - A GUIDE FOR ORGANISERS OF CONTESTS IN THE INDOOR FREE FLIGHT CLASSES
- ANNEX 4 – FREE FLIGHT RANKING

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1 FAI Statutes, Chapter 1, para. 1.6

2 FAI Sporting Code, General Section, Chapter 4, para 4.1.2

3 FAI Statutes, Chapter 1, para 1.8.1

4 FAI Statutes, Chapter 2, paras 2.1.1; 2.4.2; 2.5.2 and 2.7.2

5 FAI Bylaws, Chapter 1, para 1.2.1

6 FAI Statutes, Chapter 2, para 2.4.2.2.5

7 FAI Bylaws, Chapter 1, paras 1.2.2 to 1.2.5

8 FAI Statutes, Chapter 5, paras 5.1.1; 5.2, 5.2.3 and 5.2.3.3

9 FAI Sporting Code, General Section, Chapter 4, para 4.1.5

10 FAI Sporting Code, General Section, Chapter 2, para 2.2

11 FAI Statutes, Chapter 5, para 5.2.3.3.7

12 FAI Statutes, Chapter 6, para 6.1.2.1.3

# VOLUME F1

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**THIS 2024 EDITION INCLUDES THE FOLLOWING AMENDMENTS MADE TO THE 2023 CODE**

**These amendments are marked by a double line in the right margin of this edition**

Paragraph	Plenary meeting approving change	Brief description of change	Change incorporated by
Annex 1	2024	Addition of F1N and F1N-Junior to para A1.1 <i>Note: Approved for early application to allow registration of events during 2024 for the World Cup for these classes to start in 2025</i>	Ian Kaynes F1 Subcommittee Chairman
All F1.2 F1C.2 F1D.2, F1L.2, F1M.2, F1R.2 F1E.9 F1S.2 Annex	2023	Number System Timing Future change noted Builder of Model Information  Timing Motor run World Cup deletion F1P, modified point allocation	Tyson Dodd Technical Secretary and Ian Kaynes F1 Subcommittee Chairman

<b>Four-Year Rolling Amendments for Reference</b>			
Paragraph	Plenary meeting approving change	Brief description of change	Change incorporated by
F1.2.6 F1.2.7 F1Q 3.8.8 F1S 3.S.1 Annex 4	2022	Time recorded for duration of flight Electronic evidence of flight time Electric Power Classification No surface movements Points from Events	Tyson Dodd Technical Secretary
F1.1.4 b) Additional flights in Open Internationals	2022	<b>Early implementation – effective 1<sup>st</sup> June 2022</b>  Revised rules for conducting an 'altitude fly-off'.	Tyson Dodd Technical Secretary & Ian Kaynes F1 Subcommittee Chairman
F1.1.2 a) & F1.2.1 b)	2021	Added requirement for organisers of Open Internationals regarding provision of timekeepers.	Kevin Dodd Technical Secretary & Ian Kaynes F1 Subcommittee Chairman
3.2.8 c)		In F1B fly-off rounds, motors are to be wound within the 7 minute period.	
3.4.2		Added an option for organisers to specify a reduced motor in Open International competitions.	
Annex 1: 3		Standardised procedure for AMS online application.	
Annex 1: 4 c)		Introduced bonus points for the top three places.	
Annex 1: 4 a) & e)		Returned to counting the score in the first round only for the award of bonus points.	
Annex 1: 1 & 2		Introduced F1D and F1D Junior World Cup events.	
Annex 1 1	2020	Added a new World Cup Junior class: F1Q Junior	Kevin Dodd Technical Secretary & Ian Kaynes F1 Subcommittee Chairman
F1.1.3	2019	Added clarification to wait time for timekeepers in F1E	Kevin Dodd Technical Secretary & Ian Kaynes F1 Subcommittee Chairman
F1.1.4		New paragraph detailing options for additional flights in Open Internationals	
3.S.2		Allow option of radio dethermalisation for F1S	
3.3.2	(2017 – advance notice rule)	As from 2020, radio dethermalisation for F1C must include stopping the motor. Delete the redundant Annex 5.	

## **RULE FREEZE FOR THIS VOLUME**

With reference to Paragraph A.10.2 of CIAM General Rules:

In all classes, the two-year rule for no changes to model aircraft/space model specifications, manoeuvre schedules and competition rules will be strictly enforced. For Championship classes, changes may be proposed in the year of the World Championship of each category.

For official classes without Championship status, the two-year cycle begins in the year that the Plenary Meeting approved the official status of the class. Changes for official classes may be proposed in the second year of the two-year cycle.

This means that in Volume F1:

- a) for categories F1A, F1B, F1C, F1E changes can next be agreed at the Plenary meeting 2025 for application from January 2026;
- b) for categories F1D, F1P, F1Q and F1N changes can next be agreed at the Plenary meeting 2024 for application from January 2025;
- c) the other classes are all provisional and are not subject to this restriction.

The only exceptions allowed to the two-year rule freeze are genuine and urgent safety matters, indispensable rule clarifications and noise rulings.

## VOLUME F1

### GENERAL REGULATIONS FOR FREE FLIGHT CONTESTS

#### F1.1 ORGANISATION REQUIREMENTS FOR FREE FLIGHT CONTESTS

The organiser must :

##### F1.1.1 Starting Line

- a) Provide a starting line in Free Flight contests for classes F1A, F1B, F1C, F1G, F1H, F1J, F1K, F1P, F1Q and F1S from which launching must take place. This starting line must be approximately at right angles to the prevailing wind direction at the start of each round.
- b) Starting positions are indicated by markers, spaced at least 10 metres apart along the starting line. The starting poles for F1C shall be at least 50m separated from the starting poles of other Free Flight classes except for the powered classes F1P, F1J, F1Q and F1S. In the case of F1A, the helpers shall launch the model at this pole. Each country and any reigning champion or defending junior champion (C.5.3 d), if not a member of his national team, is allotted a starting position for the first round by draw. In each successive round, all countries move a defined number of starting positions along the line in the same direction; upon reaching the end of the line, a country takes its next position at the other end of the line. The number of starting positions to be moved is established by dividing the number of starting poles by the number of official flights, the result to be rounded up to the next whole number above. Each competitor in the fly-off is allotted a starting position by draw for each fly-off round.
- c) Spectators are not allowed within 25 m from the starting line. The only people allowed at the starting position are contest officials, the competitor, his helper, the team manager and the assistant team manager.
- d) During the rounds test flying is not allowed near the starting line or upwind of the starting line. The Organiser shall specify an area to be used for test flying during the rounds.
- e) In Free Flight contests for class F1E, provide a starting line facing the wind with, on both ends, one perpendicular parallel line following the slope. The timekeepers are free to move within the area behind the starting line and between the parallel lines. The competitor can launch his model in any position on the slope between the parallel lines and below the starting line.

##### F1.1.2 Provision of Timekeepers

- a) In Free Flight events, provide each starting position with two time keepers in Championships. At Open Internationals each starting position should be provided with at least one timekeeper, but if the organisers are unable to provide official timekeepers, they must announce this in advance in a bulletin. For fly-offs an additional timekeeper must be provided (i.e. three for Championships, at least two for other contests). All time keepers must have binoculars. Each starting position must be equipped with at least one tripod for supporting binoculars.
- b) In F1E Championships each country and the reigning champion, if not a member of this national team, is allotted a pair of timekeepers for the first round by draw. In successive rounds all countries change timekeepers by moving one down the list of timekeepers. In other F1E competitions timekeepers are allocated to competitors in the order in which they arrive at the starting line.

##### F1.1.3 Working Time

- a) In Championships there are no limits on working time.
- b) For all classes except F1E, at open internationals at which at least one timekeeper is supplied for each starting position, the organiser may define a working time which is measured from the time the competitor receives his timekeepers. The working time shall be 15 minutes. If a competitor has not launched his model or released his glider within his working time, then he may have another working time later in the round, taking his place after other competitors who are ready and waiting to fly at that starting position.
- c) In F1E the working time shall be 5 minutes. If a competitor has not launched a flight during his working time, then he must go to the end of the queue of competitors waiting for timekeepers. It is not allowed for a proxy to hold a place in the line for the competitor before the competitor himself has reached the end of the line.

### F1.1.4 Additional Flights in Open Internationals

In the specification of each outdoor free flight class a procedure is defined for additional flights to decide the individual placings when there is a tie. The maximum flight time is increased for each additional flight subject to conditions. This procedure must be followed at Championships and should be followed at Open Internationals.

At Open Internationals the organisers sometimes have a problem completing this regular procedure. For exceptional reasons of strong winds, poor visibility, inadequate field space, or unavailability of the field for continuation on the following day, Open Internationals may use a non-standard additional flight procedure for all outdoor F1 classes except F1E with the following conditions:

- a) A non-standard procedure must be used ONLY for these exceptional reasons of strong winds, poor visibility, inadequate field space, or unavailability of the field for continuation on the following day.
- b) An "altitude flyoff" may be specified when F1 altimeters have been approved by CIAM EDIC and at least one of the following conditions are met:
  1. Altimeters are available for competitors to purchase from at least one supplier.
  2. All competitors in the fly-off have their model equipped with an approved altimeter.
  - i) The procedures for a regular additional flight for the class are followed.
  - ii) A maximum flight time is defined which should be at least two minutes.
  - iii) Before the flight the competitor shows his altimeter to the timekeeper for the timekeeper to record the serial number marked on the altimeter and to confirm that it shows the empty memory indication.
  - iv) The flight is timed up to the maximum time.
  - v) Competitors must present their altimeters and altitude read out no later than 60 minutes after the end of the fly-off.
  - vi) For all competitors attaining the maximum flight time, the altitude of the model at the maximum flight time is read from the altimeter referenced to a zero altitude defined by the altitude during the 10 seconds before launch of the model (for F1A before the helper releases the model from the ground and for F1C before starting the motor). For scoring purposes the altitude is rounded to the nearest metre.
  - vii) The individual placings are determined by the highest altitudes for all flights attaining the maximum, followed by time order. Competitors with a recorded altitude are placed before competitors not returning an altitude, even if the recorded altitude is negative.
  - viii) Equal altitudes are considered to be a tie, which may be resolved by another additional flight.
  - ix) The proper operation of the altimeter is the responsibility of the competitor.

## F1.2 TIMING

### F1.2.1 Timekeepers

- a) Each team shall have the right to provide a timekeeper for the following classes of World and Continental Championships: F1A, F1B, F1C, F1P, F1D, F1E with the organiser to be responsible for providing lodging and food only. Teams must nominate only skilled timekeepers and the timekeepers must bring binoculars, watches and tripods for their own use. The organiser must use these timekeepers as a priority, before allocating duties timekeepers of the host nation or other timekeepers.
- b) Competitors may act as timekeepers for flights of other competitors. The requirement for at least two timekeepers always applies.
- c) In case competing fly-off participants are requested to supply timekeeper(s) for a fly off (see a), these time keepers must be randomly distributed among the competing fly-off participants, e.g. by draw or moving timekeepers to respective neighbouring starting poles.

### F1.2.2 Model recognition

The timekeepers must familiarise themselves with the colour and shape of the model in order to recognise it during the flight.



**F1.2.3 End of flight**

The flight is considered ended when

- a) the maximum duration for the flight is reached.
- b) the flight is definitely terminated by the model landing on the surface of the earth or encountering an obstacle.
- c) the model definitely disappears from the timekeeper's sight. If the model disappears behind some obstacles or in clouds, the timekeepers are to wait for ten seconds; should the model not reappear, timing will cease and the ten seconds will be subtracted from the flight time.

**F1.2.4 Number of timekeepers**

- a) The flights must be timed by two timekeepers during the first seven rounds and, in the fly-off, each flight must be timed by at least three timekeepers – the additional timekeepers preferably to be picked among the competitors – with quartz controlled electronic stopwatches with digital readout recording to at least 1/100th of a second.
- b) All timekeepers must be equipped with binoculars.

**F1.2.5 Position of timekeepers**

For all classes except F1E, the timekeepers must remain within a circle of 10 metres radius during the flights and time the flights independently of each other.

**F1.2.6 Time recorded**

The duration of the flight recorded is the mean of the times registered by the timekeepers, rounded to the nearest whole number of seconds to the resulting mean time (0.5 second rounded up to the second above) unless the difference between the times registered shows evidence of an error in the timing, in which case the organiser will determine, with the FAI Jury, which time will be registered as the official time or what action should be taken.

**F1.2.7 Electronic evidence of flight time**

In Fly-offs, electronic time and altitude recording devices may be used mounted in or on a model. Such devices must be commercially available with an altitude measuring frequency of at least 2 Hz and display equipment like a computer, tablet or smart phone equipped with graphing software must be available to produce a time-altitude graph of the recorded flight. The responsibility of the use and correct functioning of such devices rests with the competitor.

The use of an altimeter is voluntary.

If the competitor is using an EDIC-approved altimeter then this must be shown to the timekeeper before the flight for the timekeeper to record the serial number marked on the altimeter and to confirm that for the first additional flight it shows the empty memory indication

Competitors using altimeters which are not EDIC-approved must follow the following procedure. Prior to each fly off, participants with (reserve) models equipped with such recording devices being switched on, should position their model(s) at ground level no more than 5 metres from their assigned starting pole. Upon instruction of the contest director, the participant will have to lift the model(s) from the ground and hold the model(s) elevated a number of times, the number and duration of these movements is decided by the contest director thereby generating a unique altitude-time signature.

In case of a flight-time related dispute, the competitor automatically may proceed to the following fly off round. Any dispute must be marked on the competitor's scorecard for that fly off round. After the last fly off but no later than 30 minutes from the end of the last fly off, the jury will ask the competitor who filed the dispute to read out the altimeter data and present the altitude versus time graph. The jury will check the signature in the graph and determine the flown time for the fly off round for which a dispute has been filed. If the moment of launch, landing and flight time can be clearly established and the correct signature is present, the flight time will be recorded for the final result. If any one of these conditions is not met, the timekeeper's time of the disputed fly off round will be used as the score for that fly off round. If this time is less than the maximum flight time set for that particular fly off round, any subsequently flown fly off rounds will be cancelled for that competitor. In case of a protest related to the altimeter generated flight time, the altitude graphs must be made available to the jury. Failure to do so will result in the time keeper's recorded flight time being the official score.

**F1.2.8 Instructions for using binoculars at Free Flight Contests**

- a) The binoculars must have a magnification of at least 7. On each starting position at least one of the binocular will be mounted on a tripod.

- b) The timekeeper will adjust the binoculars before timing, so as to suit his eyesight. To do this the focus will first be adjusted with the centre knob, and then by separate adjustment of the adjustable eyepiece. The distance between the eyepieces will be adjusted so as to give a circular field of view.

*Note: Binoculars with no central focusing device will be adjusted by altering each eyepiece in turn.*

- c) After adjustment and scale, readings will be noted. This should simplify readjustment if needed.
- d) The timekeepers must not use the binoculars whilst the model is being launched. Use of the binoculars is suggested after about one minute of flight, except that in class F1A binoculars should be used whilst the model is being launched with the aim of clearly fixing the moment of its release in case the competitor has gone far away from the starting point.
- e) Use of the binoculars must not be left until too late in the flight, when there is a risk of not finding the model with the binoculars.

### **F1.3 PROCESSING OF MODEL AIRCRAFT FOR INTERNATIONAL COMPETITIONS**

#### **F1.3.1 Processing of Free Flight Model Aircraft - Class F1A, F1B, F1C, F1E, F1P**

- a) Model specification certificates and corresponding models must be presented on arrival at the time of registration for the event. The organiser will indicate that these models have been registered by a stamp or marking on the model across the edge of the FAI sticker.

This stamp or marking must not introduce any alternative model identification, this being provided by the model identification code (C.11.1)

- b) Official processing of the model characteristics will not take place before the start of the contest.
- c) Before the start and during the contest, the competitors have the right to have launching cables (F1A) and motors (F1B) and swept volumes of motors (F1C, and F1P) officially checked.
- d) Before the start and during the contest, the competitors have the right to have the weight of their models checked.

#### **F1.3.2 Processing Indoor Model Aircraft for competition flights**

Indoor free flight duration models must be processed before each flight to confirm that the model meets the dimensional and weight requirements of the class and to confirm the FAI unique number of the competitor is marked on the model. Rubber motors are to be weighed before or after the flight to confirm that these are within the specification.

### **F1.4 FREE FLIGHT CHAMPIONSHIPS**

#### **F1.4.1 Team Classification**

Team Classification at all Free Flight Championships will be made according to the scheme described in C.15.6.2.a (ii). As a clarification of the application for free flight, the initial classification is based on the score in the regular flights and the next stage is based on the sum of the individual placing of team members (including flyoffs for F1A, F1B, F1C, F1E, F1P or counting more flights in F1D).

#### **F1.4.2 Age Classification F1D**

At F1D World and Continental Championships, when juniors and seniors fly together in the same site and at the same time, the junior competitors who are members of a national Senior team will appear in the individual senior classification, but must also be considered in the national Junior team and included in the Junior individual classification as far as the Junior national team is not complete. The names of the junior national team members must be declared before the beginning of the competition

### **F1.5 INTERRUPTION OF A CONTEST**

#### **F1.5.1 Wind speed**

The interruption of contests is defined in CIAM General Rules C.17.2. For Free Flight contests the contest should be interrupted when the wind measured at 2 metres above the ground at the starting line is stronger than 9 m/s for at least 20 seconds.

### **F1.5.2 Interruption**

When the reason for an interruption (C.17.2 a) at a free flight competition has affected the success of flights made before the interruption, then for continuation of the round the following applies:

- a) If the affected flights can be ascertained readily, then these competitors may repeat their flights during the continued round.
- b) If the affected flights cannot readily be identified, then all competitors who have flown before the interruption may repeat their flights during the continued round.

In both cases, when the competitor has chosen to make a repeat flight then this is a new official flight which has the normal attempt allocation and the result will count for his score in the round.

## TECHNICAL REGULATIONS FOR FREE FLIGHT CONTESTS

### F1A CLASS F1A - GLIDERS

#### F1A.1 Definition

Model aircraft which is not provided with a propulsion device and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed in flight except for changes of camber or incidence. Model aircraft with variable geometry or area must comply with the specifications when the surfaces are in minimum and maximum extended mode.

#### F1A.2 Characteristics of Gliders F1A

Surface area (St)..... 32 - 34 dm<sup>2</sup>

Minimum weight..... 410 grams

Maximum length of launching cable loaded by 5 kg..... 50 m

F1A models may use radio control only for irreversible actions to control dethermalisation of the model. Any malfunction or unintended operation of these functions is entirely at the risk of the competitor.

#### F1A.3 Number of Flights

- a) Each competitor is entitled to five or seven official flights. The number to be flown must be announced in advance in the bulletin.
- b) Each competitor is entitled to one official flight in each round of the event. The duration of rounds must be announced in advance and may not be less than 30 minutes or greater than 90 minutes. The competitor must tow and release his model during the round for the official flight, including attempts and repeated attempts

#### F1A.4 Definition of an Official Flight

- a) The duration achieved on the first attempt unless this attempt is unsuccessful under the definition of F1A.5. (If the attempt is unsuccessful for reason F1A.5.f and a second attempt is not made then the duration of the first attempt is recorded as the official flight time).
- b) The duration achieved on the second attempt. If the second attempt is also unsuccessful under the definition of any of F1A.5.a, F1A.5.b, F1A.5.c, F1A.5.d, or F1A.5.e, then a zero time is recorded for the flight.

#### F1A.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 returns to the ground without release of the cable.
- b) The moment of release of the cable cannot properly be established by the timekeepers.
- c) It is apparent to the timekeepers that a part of the model becomes detached during the launch by the helper, while the model is being towed, or during the official flight time.
- d) It is apparent to the timekeepers that the competitor has lost contact with the cable and the competitor or his team manager chose to declare an attempt.
- e) It is apparent to the timekeepers that the competitor has lost contact with the cable and the cable is controlled by a person other than the competitor himself.
- f) The recorded duration of the flight is less than 20 seconds.

#### F1A.6 An attempt may be repeated when:

- a) the model collides with a person, other than the person who launched it, when being launched.
- b) during towing, the model collides with a model in free flight (but not with a model being towed or with a towline) and towing cannot continue normally.
- c) during the flight the model collides with another model or a towline other than its own towline.

Should the model continue its flight in a normal manner, the competitor may demand that the flight is accepted as an official flight, even if the demand is made at the end of the flight.

**F1A.7 Duration of Flights**

The maximum duration to be taken for the official flights in world and continental championships is four minutes for the first round and, if conditions allow, for one other round and three minutes for the other rounds. In other international events a maximum of three minutes will be used for all rounds unless different durations (not exceeding five minutes) have been announced in advance in the contest bulletin for specific rounds.

In the event of model recovery problems or to suit meteorological conditions the Jury may permit the maximum for a round to be changed. Such a modified maximum must be announced before the start of the round.

Maximum durations greater than three minutes should only be used for rounds at times when wind and thermal activity are expected to be at a minimum.

**F1A.8. Classification**

- a) The total time for each competitor for each of the official flights defined in F1A.3. is taken for the final classification. This total time achieved is also used to determine team classification.
- b) In order to decide the individual placings when there is a tie, additional flights shall be made after the last flight of the event has been completed. The maximum time of flight for the first of the deciding flights shall be six minutes and the maximum time of flight shall be increased by two minutes for each subsequent flight. The time of the additional flights shall not be included in the final figures of the classification for teams; they are for the purpose of determining the individual placing.
- c) The organiser will establish a 7-minute period during which all fly-off competitors must tow and release their model. Within these 7 minutes the competitors will have the right to a second attempt in the case of an unsuccessful first attempt for an additional flight according to paragraph F1A.5. Starting positions will be decided by draw for each fly-off.
- d) If for meteorological reasons or poor visibility or model recovery problems, a fly-off must be postponed to be flown in the morning, it will be flown as early as daylight and visibility permit in order to avoid thermal activity. The maximum duration of the first flight will be a minimum of ten minutes.
- e) In the event of exceptional meteorological conditions or model recovery problems, the Jury may permit the maximum for a round to be changed. Such a modified maximum must be announced before the start of the round.

**F1A.9 Timing**

- a) See F1.2.
- b) The timing of flights is limited to the maximum durations specified in F1A.7 and F1A.8. The total flight time is taken from the release of the model from the launching cable to the end of the flight.

**F1A.10 Number of Helpers**

The competitor is entitled to have one helper.

**F1A.11 Launching Devices**

- a) The glider must be launched by means of a single cable and its length, including release equipment and the launching device shall not exceed 50 metres when subjected to a tensile load of 5 kg. This tensile load shall be applied by means of an appropriate apparatus available to the competitors before and during the competition and also to officials during the competition when checking at least 20% of the gliders. Metal cables are prohibited.
- b) Launching of the glider by means of this cable may be carried out with the help of various devices such as winches, single or multiple pulley trains, or by running etc. These devices (except the launching cable) must not be thrown by the competitor, under penalty of cancellation of the flight. The competitor may release the launching cable and a lightweight marker (such as a ring, pennant or small rubber ball) at its end.
- c) To facilitate observation and timing, the cable must be equipped with a pennant, having rectangular shape of a minimum area of 2,5 dm<sup>2</sup> and the smallest side of at least 5cm, attached directly to the main cable.
- d) All types of auxiliary stabilising devices on the cable are forbidden. A parachute may be substituted for the pennant provided it is not attached to the glider and remains packed and inactive until the release of the cable.

**F1A.12 Organisation of Launching**

- a) The competitor must be on the ground and must operate the launching device himself (jumping allowed).
- b) All freedom of action and movement is permitted to allow the best use of the cable, except throwing of the launching device.
- c) The model must be launched within approximately 5 metres from the starting position marker.

**F1B CLASS F1B – MODEL AIRCRAFT WITH EXTENSIBLE MOTORS****F1B.1 Definition**

Model aircraft which is powered by an extensible motor and in which lift is generated by the aerodynamic forces acting on surfaces remaining fixed in flight, except for changes of camber or incidence. Model aircraft with variable geometry or area must comply with the specifications when the surfaces are in minimum and maximum extended mode.

**F1B2 Characteristics of Model Aircraft with Extensible Motors F1B**

Surface Area (St) ..... 17 - 19 dm<sup>2</sup>

Minimum weight of model less motor(s) ..... 200 g

Maximum weight of motor(s) lubricated..... 30 g

F1B models may use radio control only for irreversible actions to control dethermalisation of the model. Any malfunction or unintended operation of these functions is entirely at the risk of the competitor.

**F1B.3 Number of Flights**

- a) See F1A.3.a.
- b) Each competitor is entitled to one official flight in each round of the event. The duration of rounds must be announced in advance and may not be less than 30 minutes or greater than 90 minutes. The competitor must wind his rubber motor and launch his model during the round for the official flight, including attempts and repeated attempts

**F1B.4 Definition of an Official Flight**

- a) The duration achieved on the first attempt unless this attempt is unsuccessful under the definition of F1B.5. If the attempt is unsuccessful under the definition of F1B.5b and a second attempt is not made then the duration of this first attempt is recorded as the official flight time.
- b) The duration achieved on the second attempt. If the second attempt is also unsuccessful under the definition of F1B.5.a. then a zero time is recorded for the flight.

**F1B.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) It is apparent to the timekeepers that a part of the model becomes detached during the launch or during the official flight time.
- b) The recorded flight duration is less than 20 seconds.

**F1B.6 Repeat of an Attempt**

An attempt may be repeated when the model collides with another model in flight, or a person other than the competitor himself while being launched. Should the model continue its flight in a normal manner, the competitor may demand that the flight be accepted as an official flight, even if the demand is made at the end of the attempt.

**F1B.7 Duration of Flights**

See F1A.7.

**F1B.8 Classification**

- a) See F1A.8.a.
- b) See F1A.8.b.
- c) The organiser will establish a 7-minute period during which all fly-off competitors must wind their rubber motor and launch their model. Within these 7 minutes the competitor will have the right to a second attempt in the case of an unsuccessful attempt for an additional flight according to para F1B.5. Starting positions will be decided by a draw for each fly-off.
- d) See F1A.8.d.
- e) See F1A.8.e.

**F1B.9 Timing**

- a) See F1.2.

- b) The timing of flights is limited to the durations specified in F1B.7 and F1B.8. The total flight time is taken from the launch of the model to the end of the flight.

**F1B.10 Number of Helpers**

The competitor is entitled to have one helper at the starting pole position.

**F1B.11 Launching**

- a) Launching is by hand, the competitor being on the ground (jumping allowed).
- b) Each competitor must wind his motor and launch the model himself.
- c) The model must be launched within approximately 5 m from the starting pole position.
- d) Additional heat may not be applied to the motor.



**F1C CLASS F1C – MODEL AIRCRAFT WITH PISTON MOTORS****F1C.1 Definition**

Model aircraft in which the energy is provided by a piston type motor and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed in flight, except for changes of camber or incidence. Models with variable geometry or area must comply with the specifications when the surfaces are in minimum and maximum extended mode.

**F1C.2 Characteristics of Model Aircraft with Piston Motor(s) F1C**

Maximum swept volume of motor(s) ..... 2,5 cm<sup>3</sup>

No exhaust extensions whatsoever are allowed to the exhaust opening(s) of the motor

Minimum total weight ..... 300 g/cm<sup>3</sup> swept volume of motor(s)

Minimum loading ..... 20 g/dm<sup>2</sup>

Maximum duration of motor run: ..... 4 seconds from release of model.

Fuel to a standard formula for glow plug and spark ignition motors will be supplied by the organisers, and must be used for every official flight. The composition shall be as follows: 80% methanol, 20% oil. Oil can be castor oil or synthetic oil. There is a free choice for the competitor.

**Note:** Fuel for compression ignition motors is not restricted.

Before each attempt for an official flight the fuel tank must be washed out with standard formula fuel.

F1C models must be fitted with functional radio control only for irreversible actions to control dethermalisation of the model. This must include stopping the motor if it is still running. Any malfunction or unintended operation of these functions is entirely at the risk of the competitor.

*The following addition to this paragraph will become effective on January 1 2025: "The full functionality of radio control must be available from the moment the model aircraft is ready to be refueled and must be available till the activation of DT by the timer or by radio control."*

**F1C.3 Number of Flights**

a) See F1A.3.a.

b) Each competitor is entitled to one official flight in each round of the event. The duration of rounds must be announced in advance and may not be less than 30 minutes or greater than 90 minutes. The competitor must start his motor and launch his model during the round for the official flight, including attempts and repeated attempts

**F1C.4 Definition of an Official Flight**

a) The duration achieved on the first attempt unless this attempt is unsuccessful under the definition of F1C.5. If the attempt is unsuccessful under the definition of F1C.5c and a second attempt is not made then the duration of this first attempt is recorded as the official flight time.

b) The duration achieved on the second attempt. If the second attempt is also unsuccessful under the definition of F1C.5a or F1C.5b., then a zero time is recorded for the flight.

**F1C.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 time of the motor run from the release of the model exceeds the time specified in F1C.2. or F1C.8 as appropriate for the flight.

b) It is apparent to the timekeepers that a part of the model becomes detached during the launch or during the official flight time.

c) The recorded duration of the flight is less than 20 seconds.

**F1C.6 Repeat of an Attempt**

An attempt may be repeated when the model collides with another model in flight, or a person other than the competitor himself while being launched. Should the model continue its flight in a

normal manner, the competitor may demand that the flight be accepted as an official flight, even if the demand is made at the end of the attempt.

**F1C.7 Duration of Flights**

See F1A.7.

**F1C.8 Classification**

- a) See F1A.8.a.
- b) See F1A.8.b.
- c) Starting positions will be decided by a draw for each fly-off. The organiser will establish a 7-minute period during which all fly-off competitors must start their engines and launch their model. Within these 7 minutes the competitor will have the right to a second attempt in the case of an unsuccessful attempt for an additional flight according to para F1C.5.
- d) See F1A.8.d.
- e) See F1A.8.e.

**F1C.9 Timing**

- a) See F1.2.
- b) The timing of flights is limited to the durations specified in F1C.7 and F1C.8. The total flight time is taken from the launch of the model to the end of the flight.
- c) The motor run must be timed by two timekeepers with quartz controlled electronic stopwatches with digital readout, recording to at least 1/100 of a second. The motor run is determined as the average of the two registered times, and this average is reduced to the nearest 1/10<sup>th</sup> of a second below.

**F1C.10 Number of Helpers**

The competitor is entitled to have one helper at the starting pole position.

**F1C.11 Launching**

- a) Launching is by hand, the competitor being on the ground (jumping allowed).
- b) Each competitor must start and regulate the motor or motors and launch the model himself.
- c) The model must be launched within approximately 5 m from the starting pole position.

**F1C.12 Noise**

The noise level at the perimeter of the field where F1C is being flown shall be no more than 6 dB(A) above the ambient noise level at all parts of the field boundary where there is a noise sensitivity. If the perimeter noise level exceeds this limit, the launch line shall be moved away from the field boundary to a point where the level is in compliance with the limit.

**F1D CLASS F1D - INDOOR MODEL AIRCRAFT****F1D.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.

**F1D.2 Characteristics of Indoor Model Aircraft F1D**

Maximum wingspan of the monoplane model ..... 550 mm,

Maximum chord of the lifting surfaces ..... 200 mm

Maximum tail span ..... 450 mm,

Minimum weight without rubber motor ..... 1.4 g,

Maximum weight of the lubricated rubber motor ..... 0.4 g.

The competitor must be the builder of the models entered.

The model shall carry the FAI unique ID number of the competitor on the motorstick written with permanent marker or other non-removable means.

For Open Internationals (not Championships) in category 1 (less than 8m) and category 2 (from 8 to 15 m) sites, the organiser may specify that the rubber motor (0,4g) must be replaced by a rubber motor of maximum weight 0,2g and a spacer (free length but minimum weight 0,2g). This must be announced in advance in the competition bulletin. The reduced motor and the spacer are to be checked before or after the flight as in F1.3.2.

F1D.2.1 The "Builder of Model" rule shall apply to all F1D Competitions. The following allowances and restrictions to the BOM rule will apply:

F1D.2.2 The use of prefabricated flying surfaces (either pre-built or pre-covered) or pre-glued/pre-moulded subcomponents such as a rolled motor tube, rolled tail boom, wing/stab tips or outlines, prop blade outlines, or preformed sheet wood props will not be permitted.

F1D.2.3 The use of prebuilt variable pitch prop hubs will be permitted.

F1D.2.4 The use of preformed prop shafts, rear rubber hooks, thrust bearings, teflon washers, and mounting tubes (for wings, stabs, etc) will be permitted.

F1D.2.5 The builder may use premade raw building materials needed to craft the parts of the model such as sawn balsa wood, wire, composites, pultruded rod or tubing, adhesives, and covering material

F1D.2.6 Kits that include laser cut balsa parts will be permitted.

**F1D.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.

**F1D.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.

**F1D.5 Number of Model**

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

**F1D.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.

### F1D.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.

### F1D.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.

### F1D.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.

### F1D.10 Number of Helpers

The competitor is entitled to have one helper.

**F1D.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.

**F1D.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.

**F1E CLASS F1E – GLIDERS WITH AUTOMATIC STEERING****F1E.1 Definition**

Model aircraft not provided with a propulsion device and in which lift is generated by aerodynamic forces acting on surfaces that remain fixed in flight, except for changes of incidence. Variable geometry or area is not allowed.

The glider can be equipped with a steering device, which may use a direction sensor and measurement of flight time. The steering device must not use any measurement of geographical location and must not be controlled remotely during the flight.

**F1E.2 Characteristics of Gliders with Automatic Steering F1E**

Maximum surface area (St) ..... 150 dm<sup>2</sup>

Maximum loading ..... 100 g/dm<sup>2</sup>

Maximum flying weight ..... 5 kg

F1E models may use radio control only for irreversible actions to control dethermalisation of the model. Any malfunction or unintended operation of these functions is entirely at the risk of the competitor.

**F1E.3 Number of Flights**

The competition shall consist of five official flights, and shall be divided into five rounds in each of which one official flight may be recorded. The starting time, length and closing time for each round must be announced by the organisers prior to the start of the round and displayed throughout the round. For each official flight, including second attempts and repeated attempts, the model must be launched between the starting and closing time of the round.

**F1E.4 Definition of an Official Flight**

- a) The duration achieved on the first attempt unless this attempt is unsuccessful under the definition of F1E.5. If the attempt is unsuccessful under the definition of F1E.5b and a second attempt is not made then the duration of this first attempt is recorded as the official flight time.
- b) The duration achieved on the second attempt. If the second attempt is also unsuccessful under the definition of F1E.5a then a zero time is recorded for the flight.

**F1E.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) It is apparent to the timekeepers that a part of the model becomes detached during the launch or during the official flight time.
- b) The recorded flight duration is less than 20 seconds.

**F1E.6 Repeat of an Attempt**

An attempt may be repeated when the model collides with another model in flight, or a person other than the competitor himself while being launched. Should the model continue its flight in a normal manner, the competitor may demand that the flight be accepted as an official flight, even if the demand is made at the end of the attempt.

**F1E.7 Duration of Flights**

The maximum duration for each flight shall be decided by the Contest Director and shall be between two minutes and five minutes inclusive. This maximum time shall be announced prior to the start of each round and clearly displayed throughout the round.

**F1E.8 Classification**

- a) In each round, the time in seconds recorded by each competitor shall be expressed as a percentage of either (i) the declared maximum time, or (ii) if no maximum time is recorded by any competitor, the highest flight time achieved in that round. This percentage is entered as the competitor's score for the round. The percentage scores should be displayed on the scoreboard rounded to the nearest value to 2 decimal places (0.005 rounded up). All scores from the five rounds will decide the final classification. In open internationals (not championships) a general classification is produced for all junior and senior competitors.

The junior classification is made using the scores obtained by the juniors in the general classification.

- b) In the event of a tie, individual placings are to be decided by additional flights made immediately after the last flight of the contest has been made. The Contest Director shall decide an appropriate maximum time for each additional round required and the above percentage scoring system is applied. Scores resulting from such additional flights are not included to decide team classification.
- c) The Contest Director will establish a 10-minute period during which all fly-off competitors must release their models.

**F1E.9 Timing**

- a) See F1.2.
- b) The timing of flights is limited to the duration specified by the Contest Director under F1E.7. The total flight time is taken from the launch of the model to the end of the flight. Timekeepers and competitors must ensure that they are aware of the decided maximum time for the round in progress.

**F1E.10 Number of Helpers**

The competitor is entitled to have one helper.

**F1E.11 Launching**

- a) Launching is by hand, the competitor standing on the ground (jumping allowed).
- b) Each competitor must adjust and launch the model himself.
- c) Competitors may erect streamers at any location that is unlikely to obstruct the flight of models. Competitors may use devices to measure meteorological conditions at the launch position, but are not permitted to make use of meteorological data from sensing devices which are situated more than 20m from the starting line.

## **F1N CLASS F1N – INDOOR HAND LAUNCH GLIDERS**

### **F1N.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.

### **F1N.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.

The model shall carry the FAI unique ID number of the competitor on the upper surface of the wing.

### **F1N.3 Number of Flights**

The competitor shall be allowed 9 flights.

### **F1N.4 Definition of an Official Flight**

- a) The duration achieved on the first attempt unless this attempt is unsuccessful under the definition of F1N.5.
- b) The duration achieved on the second attempt. If the second attempt is also unsuccessful under the definition of F1N.5, then a zero time is recorded for the flight.

### **F1N.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.

### **F1N.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.

### **F1N.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.

### **F1N.8 Launching**

Launching is by hand, the competitor standing on the ground. Jumping is allowed. The requirement in B.1.2.1.(b) of CIAM General Rules that models must be launched with one hand holding the fuselage does not apply to F1N.

### **F1N.9 Ceiling Height Categories**

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

- I- less than 8 metres



Class F1N Indoor Hand Launch Gliders

II- between 8 and 15 metres

III- between 15 and 30 metres

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.

**F1P CLASS F1P MODEL AIRCRAFT WITH PISTON MOTORS****F1P.1 Definition**

A model aircraft in which the energy is provided by a piston type motor and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed in flight, except for changes of incidence. Variable geometry or area is not allowed.

**F1P.2 Characteristics of Model Aircraft with Piston Type Motors**

Minimum projected wing surface area ..... 26 dm<sup>2</sup>

Maximum projected wing span ..... 1.5m

Minimum total weight ..... 250 g

Maximum duration of motor run ..... 7 seconds from release of model.

Maximum swept volume of motor(s) ..... 1,00 cm<sup>3</sup>

Only one change may be made to the wing or horizontal tail incidence during the flight before dethermalising.

No extensions whatsoever are allowed to the exhaust opening(s) of the motor(s).

The motor must drive the propeller directly, no gears allowed

Mechanical brakes are not allowed for stopping the motor.

Fuel constituents are not restricted.

F1P models may use radio control only for irreversible actions to control dethermalisation of the model. This may include stopping the motor if it is still running. Any malfunction or unintended operation of these functions is entirely at the risk of the competitor.

**F1P.3 Number of Flights**

- a) See F1A.3.a
- b) Each competitor is entitled to one official flight in each round of the event. The duration of the rounds must be announced in advance and may not be less than 30 minutes or greater than 90 minutes. The competitor must launch his model during the round for the official flight, including attempts and repeated attempts.

**F1P.4 Definition of an Official Flight**

- a) The duration achieved on the first attempt unless this attempt is unsuccessful under the definition of F1P.5. (If the attempt is unsuccessful for reason F1P.5.a) and a second attempt is not made then the duration of the first flight attempt is recorded as the official flight time.)
- b) The duration achieved on the second attempt. If the second attempt is also unsuccessful under the definition of F1P.5.b or F1P.5.c, then a zero time is recorded for the flight.

**F1P.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 recorded flight duration is less than 20 seconds.
- b) The time of the motor run from the release of the model exceeds the time specified in F1P.2.
- c) It is apparent to the timekeepers that a part of the model becomes detached during the launch or during the official flight time.

**F1P.6 Repeat of an Attempt**

An attempt may be repeated when the model collides with another model in flight or a person, other than the competitor himself, while being launched. Should the model continue its flight in a normal manner, the competitor may demand that the flight be accepted as an official flight, even if the demand is made at the end of the attempt.

**F1P.7 Duration of Flights**

The maximum duration to be taken for each official flight is to be three minutes. In the event of model recovery problems or to suit meteorological conditions, the Jury may permit the maximum

for a round to be changed. Such a modified maximum must be announced before the start of the round.

#### **F1P.8 Classification**

- a) The total time for each competitor for each of the official flights defined in F1P.3. is taken for the final classification. This total time achieved is also used to determine team classification.
- b) In order to decide the individual placings when there is a tie, additional flights shall be made after the last flight of the event has been completed. The maximum time of flight for the first of the deciding flights shall be five minutes and the maximum time of flight shall be increased by two minutes for each subsequent flight. The time of the additional flights shall not be included in the final figures of the classification for teams; they are for the purpose of determining the individual placing.
- c) Starting positions will be decided by draw for each fly-off. The organiser will establish a 7 minute period during which all fly-off competitors must start their engines and launch their model. Within these 7 minutes the competitors will have the right to a second attempt in the case of an unsuccessful first attempt for an additional flight according to paragraph F1P.5.
- d) If for meteorological reasons or poor visibility or model recovery problems, a fly-off must be postponed to be flown in the morning, it will be flown as early as daylight and visibility permit in order to avoid thermal activity. The maximum duration of the first flight will be a minimum of ten minutes.
- e) In the event of exceptional meteorological conditions or model recovery problems, the Jury may permit the maximum for a round to be changed. Such a modified maximum must be announced before the start of the round. The maximum duration of the motor run is 7 seconds.

#### **F1P.9 Timing**

- a) See F1.2.
- b) The total time of flight is taken from the launch of the model to the end of the flight.
- c) The motor run must be timed by two timekeepers with electronic stopwatches with digital readout recording at least 1/100 of a second. The motor run is determined as the average of the two registered times and the average is reduced to the nearest 1/10th of a second below.

#### **F1P.10 Number of Helpers**

The competitor is entitled to have one helper at the starting position.

#### **F1P.11 Launching**

- a) Launching is by hand, the competitor being on the ground (jumping allowed).
- b) Each competitor must start his motor and launch the model himself.
- c) The model must be launched within approximately 5 metres from the starting pole position.

## **F1Q CLASS F1Q ELECTRIC POWER MODEL AIRCRAFT**

### **F1Q.1 Definition**

Model aircraft which is powered by (an) electric motor(s) and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed in flight, except for changes of incidence. Models with variable area (eg folding wings) are not permitted.

### **F1Q.2 Characteristics**

Nickel Metal Hydride (NiMH) and Lithium (Li) batteries can be used.

Lithium type battery packs must be in "as manufactured" condition with the covering around the cell surface. If more than one cell is used a balancer connector must be fitted.

External Battery packs are required to have a safety tether to the fuselage.

Safety locks must be used to prevent unintentional restarting of motor(s) after motor(s) have been stopped.

The motor run time will be determined by a maximum energy amount. In addition, motor runs over 30 seconds are regarded as overruns. The energy budget of each model is 3 joules per gram of the total weight. For energy calculations, weight exceeding 550 grams is to be ignored.

Models must have provision for connecting a Static Energy Test (SET) device between the battery and the model's system via 3.5 mm male and female bullet connectors. The connectors from the battery should be male positive and female negative. It is the responsibility of the competitor to supply any adapters needed to connect to the SET

Energy limitation will be by an energy limiter. The allowed energy amount starts to be calculated with the release of the start button and finishes when the ESC has stopped supplying energy to the motor. The energy limiter has to calculate the energy consumed in real time. After coming to the end of the limited energy supply, the motor(s) must stop irreversibly.

For energy limit verification, a SET is to be connected to the model to allow measurements to confirm the energy used between the release of the start button and until the ESC has stopped supplying energy to the motor. To synchronise the time of release of the start button the model must include a cable connected in parallel with the start button and terminated with a 2-pin, 2.54mm pitch female connector. The SET must store and display energy amount used and motor run time.

F1Q models may use radio control only for irreversible actions to control dethermalisation of the model. This may include stopping the motor if it is still running. Any malfunction or unintended operation of these functions is entirely at the risk of the competitor.

The number of models eligible for entry by each competitor is four.

### **F1Q.3 Number of Flights**

- a) Each competitor is entitled to seven official flights.
- b) Each competitor is entitled to one official flight in each round of the event. The duration of rounds must be announced in advance and may not be less than 30 minutes or greater than 90 minutes. The competitor must launch his model during the round for the official flight, including attempts and repeated attempts.

### **F1Q.4 Definition of an Official Flight**

- a) The duration achieved on the first attempt unless this attempt is unsuccessful under the definition of F1Q.5. If the attempt is unsuccessful under the definition of F1Q.5.c and a second attempt is not made then the duration of this first attempt is recorded as the official flight time.
- b) The duration achieved on the second attempt. If the second attempt is also unsuccessful under the definition of F1Q.5.a or F1Q.5.b, then a zero time is recorded for the flight.

**F1Q.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 time of the motor run from the release of the model exceeds the time specified in F1Q.2 or F1Q.8.
- b) It is apparent to the timekeepers that a part of the model becomes detached during the launch or during the official flight time.
- c) The recorded duration of the flight is less than 20 seconds.

**F1Q.6 Repeat of an Attempt**

An attempt may be repeated when the model collides with another model in flight, or a person other than the competitor himself while being launched. Should the model continue its flight in a normal manner, the competitor may demand that the flight be accepted as an official flight, even if the demand is made at the end of the attempt.

**F1Q.7 Duration of Flights**

The maximum duration for each flight shall be three minutes.

In the event of model recovery problems or to suit meteorological conditions, the Jury may permit the maximum for a round to be changed. Such a modified maximum must be announced before the start of the round.

**F1Q.8 Classification**

- a) The total time for each competitor for each of the official flights defined in F1Q.3 is taken for the final classification.
- b) In order to decide the individual placings when there is a tie, additional flights shall be made after the last flight of the event has been completed. The maximum time of flight for the first of the deciding flights shall be five minutes and the maximum time of flight shall be increased by two minutes for each subsequent flight.
- c) The organiser will establish a 7-minute period during which all fly-off competitors must launch their model. Within these 7 minutes the competitors will have the right to a second attempt in the case of an unsuccessful first attempt for an additional flight according to F1Q.5. Starting positions will be decided by draw for each fly-off.
- d) In the event of exceptional meteorological conditions or model recovery problems, the Jury may permit the maximum for a round to be changed from that given under F1Q.8.b and decrease the maximum energy amount to 2 joules per gram and the motor run time to 20 seconds according to conditions.

**F1Q.9 Timing**

- a) See F1.2.
- b) The timing of flights is limited to the durations specified in F1Q.7 and F1Q.8. The total flight time is taken from the launch of the model to the end of the flight.
- c) The motor run must be timed by two timekeepers with quartz controlled electronic stopwatches with digital readout, recording to at least 1/100 of a second. The motor run is determined as the average of the two registered times, and this average is reduced to the nearest 1/10<sup>th</sup> of a second below.

**F1Q.10 Number of Helpers**

The competitor is entitled to have one helper at the starting pole position.

**F1Q.11 Launching**

- a) Launching is by hand, the competitor being on the ground (jumping allowed).
- b) Each competitor must start and regulate the motor or motors and launch the model himself.
- c) The model must be launched within approximately 5 m from the starting pole position.

## PROVISIONAL RULES

### **F1G CLASS F1G – MODEL AIRCRAFT WITH EXTENSIBLE MOTORS, “COUPE D'HIVER”**

These rules for Class F1G are to be used in conjunction with the relevant paragraphs of Section 4b and 4c part 1.

#### **F1G.1. Definition**

A model aircraft which is powered by an extensible motor and in which lift is generated by the aerodynamic forces acting on surfaces remaining fixed in flight, except for changes of incidence. Variable geometry or area is not allowed.

#### **F1G.2. Characteristics of Model Aircraft with Extensible Motor F1G**

Minimum weight of model less motor(s) ..... 70 g

Maximum weight of motor (s) lubricated..... 10 g

The number of models eligible for entry by each competitor is three.

F1G models may use radio control only for irreversible actions to control dethermalisation of the model. Any malfunction or unintended operation of these functions is entirely at the risk of the competitor.

#### **F1G.3 Number of Flights**

- a) Each competitor is entitled to five official flights.
- b) Each competitor is entitled to one official flight in each round of the event. The duration of rounds must be announced in advance and may not be less than 30 minutes or greater than 90 minutes. The competitor must wind his rubber motor and launch his model during the round for the official flight, including attempts and repeated attempts.

#### **F1G.4. Definition of an Official Flight**

- a) The duration achieved on the first attempt unless this attempt is unsuccessful under the definition of F1G.5. (If the attempt is unsuccessful for reason of F1G.5.a. and a second attempt is not made then the duration of the first flight attempt is recorded as the official flight time).
- b) The duration achieved on the second attempt. If the second attempt is also unsuccessful under the definition of F1G.5.b., then a zero time is recorded for the flight.

#### **F1G.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 recorded flight duration is less than 20 seconds.
- b) It is apparent to the timekeepers that a part of the model becomes detached during the launch or during the time of official flight time.

#### **F1G.6. Repeat of an Attempt**

An attempt may be repeated when the model collides with another model in flight or a person other than the competitor himself, while being launched. Should the model continue its flight in a normal manner, the competitor may demand that the flight be accepted as an official flight, even if the demand be made at the end of the attempt.

#### **F1G.7. Duration of Flights**

The maximum duration to be taken for each official flight is to be two minutes. In the event of model recovery problems or to suit meteorological conditions, the Jury may permit the maximum for a round to be changed. Such a modified maximum must be announced before the start of the round.

#### **F1G.8. Classification**

- a) The total time of the five flights is taken for the final classification.
- b) In order to decide the winner when there is a tie, additional deciding flights shall be made immediately after the last flight of the event has been completed. The maximum time of flight

in each additional round shall be increased by one minute over the maximum time of flight in the previous round.

The organiser will establish a 10 minute period during which all fly-off competitors must wind their rubber motors and launch their model. Within these 10 minutes, the competitor will have the right to a second attempt in the case of an unsuccessful attempt for an additional flight according to para F1G.5.

**F1G.9. Timing**

- a) See F1.2.
- b) The total time of flight is taken from the launch of the model to the end of the flight.

**F1G.10. Number of Helpers**

The competitor is entitled to have one helper at the starting position.

**F1G.11. Launching**

- a) Launching is by hand, the competitor being on the ground (jumping allowed).
- b) Each competitor must wind his motor and launch the model himself.
- c) The model must be launched within approximately 5 metres from the starting pole position.
- d) Additional heat must not be applied to the motor.

**F1H CLASS F1H - GLIDERS**

The rules for Class F1H are to be used in conjunction with the relevant paragraphs of Section 4b and 4c part 1.

**F1H.1. Definition**

A model aircraft which is not provided with a propulsion device and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed in flight, except for changes of incidence. Variable geometry or area is not allowed.

**F1H.2. Characteristics of Gliders F1H**

Maximum Surface area (St) ..... 18 dm<sup>2</sup>

Minimum weight ..... 220 g

Maximum length of launch cable when loaded by 2 kg .. 50 m

The number of models eligible for entry by each competitor is three.

F1H models may use radio control only for irreversible actions to control dethermalisation of the model. Any malfunction or unintended operation of these functions is entirely at the risk of the competitor.

**F1H.3. Number of Flights**

- a) Each competitor is entitled to five official flights.
- b) Each competitor is entitled to one official flight in each round of the event. The duration of rounds must be announced in advance and may not be less than 30 minutes or greater than 90 minutes. The competitor must tow and release his model during the round for the official flight, including attempts and repeated attempts.

**F1H.4. Definition of an Official Flight**

- a) The duration achieved on the first attempt unless this attempt is unsuccessful under the definition of F1H.5 (if the attempt is unsuccessful for reason F1H.5.a and a second attempt is not made then the duration of the first flight attempt is recorded as the official flight time).
- b) The duration achieved on the second attempt. If the second attempt is also unsuccessful under the definitions of F1H.5.b, F1H.5.c, or F1H.5.d then a zero time is recorded for the flight.

**F1H.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 recorded flight duration is less than 20 seconds.
- b) The model returns to the ground without release of the cable.
- c) The moment of release of the cable cannot properly be established by the timekeepers.
- d) It is apparent to the timekeepers that a part of the model becomes detached during the launch by the helper, while the model is being towed, or during the official flight time.
- e) It is apparent to the timekeeper that the competitor has lost contact with the cable and the competitor chooses to declare an attempt.

**F1H.6. Repeat of an Attempt**

An attempt may be repeated when:

- a) the model collides with a person other than the person who launched it, while being launched;
- b) during towing, the model collides with a model in free flight (but not with a model being towed or with a towline) and towing cannot continue normally.;
- c) during the flight the model collides with another model or a towline other than its own towline.

Should the model continue its flight in the normal manner, the competitor may demand the flight be accepted as an official flight, even if the demand is made at the end of the attempt.



**F1H.7. Duration of Flights**

The maximum duration to be taken for each official flight is to be two minutes. In the event of model recovery problems or to suit meteorological conditions, the Jury may permit the maximum for a round to be changed. Such a modified maximum must be announced before the start of the round.

**F1H.8. Classification**

- a) The total time of the five flights is taken for the final classification.
- b) In order to decide the individual placings when there is a tie, additional deciding flights shall be made immediately after the last flight of the event has been completed. The maximum time of flight in each additional round shall be increased by one minute on the maximum time of flight in the previous round.

The organiser will establish a 10 minute period during which all fly-off competitors must tow and release their model. Within these 10 minutes, the competitor will have the right to a second attempt in the case of an unsuccessful attempt for an additional flight according to para F1H.5.

**F1H.9. Timing**

- a) See F1.2.
- b) The total time of flight is taken from the release of the model from the launching cable to the end of the flight.

**F1H.10. Number of Helpers**

The competitor is entitled to have one helper at the starting position.

**F1H.11. Launching Devices**

- a) The glider must be launched by means of a single cable; its length including release equipment and the launching device shall not exceed 50 metres when subjected to a tensile load of 2 kg. Metal cables are prohibited.
- b) Any devices attached to the launching cable must not be thrown by the competitor, under penalty of cancellation of the flight. The competitor may release the launching cable and a lightweight marker, such as a ring, pennant or small rubber ball, at its end.
- c) To facilitate observation and timing, the cable must be equipped with a pennant, having rectangular shape of a minimum area of 2,5 dm<sup>2</sup> and the smallest side of at least 5cm, attached directly to the main cable.
- d) All types of auxiliary stabilising devices on the cable are forbidden.

**F1H.12. Organisation of Launching**

- a) The competitor must be on the ground and must operate the launching devices himself (jumping allowed).
- b) All freedom of action and movement is permitted to allow the best use of the cable, except the throwing of the launching device.
- c) The model must be launched within approximately 5 metres from the starting pole position.

**F1J CLASS F1J – MODEL AIRCRAFT WITH PISTON MOTORS**

The rules for Class F1J are to be used in conjunction with the relevant paragraphs of Section 4b and 4c part 1.

**F1J.1. Definition**

A model aircraft in which the energy is provided by a piston type motor and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed in flight, except for changes of incidence. Variable geometry or area is not allowed.

**F1J.2. Characteristics of Model Aircraft with Piston Type Motors**

Maximum swept volume of motor(s) ..... 1,00 cm<sup>3</sup>

No extensions whatsoever are allowed to the exhaust opening(s) of the motor(s).

Minimum total weight ..... 160 g

Maximum duration of motor run ..... 5 seconds from release of model.

Fuel constituents are not restricted.

The number of models eligible for entry by each competitor is three.

F1J models may use radio control only for irreversible actions to control dethermalisation of the model. This may include stopping the motor if it is still running. Any malfunction or unintended operation of these functions is entirely at the risk of the competitor.

**F1J.3. Number of Flights**

- a) Each competitor is entitled to five official flights.
- b) Each competitor is entitled to one official flight in each round of the event. The duration of the rounds must be announced in advance and may not be less than 30 minutes or greater than 90 minutes. The competitor must start his motor and launch his model during the round for the official flight, including attempts and repeated attempts.

**F1J.4. Definition of an Official Flight**

- a) The duration achieved on the first attempt unless this attempt is unsuccessful under the definition of F1J.5. (If the attempt is unsuccessful for reason F1J.5.a) and a second attempt is not made then the duration of the first flight attempt is recorded as the official flight time.)
- b) The duration achieved on the second attempt. If the second attempt is also unsuccessful under the definition of F1J.5.b or F1J.5.c, then a zero time is recorded for the flight.

**F1J.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 recorded flight duration is less than 20 seconds.
- b) The time of the motor run from the release of the model exceeds the time specified in F1J.2.
- c) It is apparent to the timekeepers that a part of the model becomes detached during the launch or during the official flight time.

**F1J.6. Repeat of an Attempt**

An attempt may be repeated when the model collides with another model in flight or a person, other than the competitor himself, while being launched. Should the model continue its flight in a normal manner, the competitor may demand that the flight be accepted as an official flight, even if the demand is made at the end of the attempt.

**F1J.7. Duration of Flights**

The maximum duration to be taken for each official flight is to be two minutes. In the event of model recovery problems or to suit meteorological conditions, the Jury may permit the maximum for a round to be changed. Such a modified maximum must be announced before the start of the round.

**F1J.8. Classification**

- a) The total time of the five flights is taken for the final classification.
- b) In order to decide the individual placings when there is a tie, additional deciding flights shall be made immediately after the last flight of the event has been completed. The maximum time of flight in each additional round shall be increased by one minute on the maximum time of flight in the previous round.

The organiser will establish a 10 minute period during which all fly-off competitors must start their engines and launch their models. Within these 10 minutes, the competitor will have the right to a second attempt in the case of an unsuccessful attempt for an additional flight according to para F1J.5.

**F1J.9. Timing**

- a) See F1.2.
- b) The total time of flight is taken from the launch of the model to the end of the flight.
- c) The motor run must be timed by two timekeepers with electronic stopwatches with digital readout recording at least 1/100 of a second. The motor run is determined as the average of the two registered times and the average is reduced to the nearest 1/10th of a second below.

**F1J.10. Number of Helpers**

The competitor is entitled to have one helper at the starting position.

**F1J.11. Launching**

- a) Launching is by hand, the competitor being on the ground (jumping allowed).
- b) Each competitor must start and regulate the motor and launch the model himself.
- c) The model must be launched within approximately 5 metres from the starting pole position.

**F1K CLASS F1K – MODEL AIRCRAFT WITH CO<sub>2</sub> MOTORS**

The regulations for class F1K given below are to be used in conjunction with the relevant paragraphs of Section 4b and 4c part 1.

**F1K.1. Definition**

A model aircraft which is powered by CO<sub>2</sub> gas motor and in which lift is generated by the aerodynamic forces acting on surfaces remaining fixed in flight, except for changes of incidence. Variable geometry or area is not allowed.

**F1K.2. Characteristics**

Minimum weight (without CO<sub>2</sub>) ..... 75 g

Maximum surface area (St) ..... 12 dm<sup>2</sup>

Maximum volume of the CO<sub>2</sub> tank(s) ..... 2 cm<sup>3</sup>  
(connecting tubes count only if their outer diameter is over 2 mm).

The number of models eligible for entry by each competitor is three (3).

F1K models may use radio control only for irreversible actions to control dethermalisation of the model. This may include stopping the motor if it is still running. Any malfunction or unintended operation of these functions is entirely at the risk of the competitor.

**F1K.3. Number of Flights**

- a) Each competitor is entitled to five official flights.
- b) Each competitor is entitled to one official flight in each round of the event. The duration of rounds must be announced in advance and may not be less than 30 minutes or greater than 90 minutes. The competitor must launch his model during the round for the official flight, including attempts and repeated attempts.

**F1K.4. Definition of an Official Flight**

- a) The duration achieved on the first attempt unless this attempt is unsuccessful under the definition of F1K.5. (If the attempt is unsuccessful under the definition of F1K.5.a and a second attempt is not made, then the duration of this first attempt is recorded as the official flight time).
- b) The duration achieved on the second attempt. If the second attempt is also unsuccessful under the definition of any of F1K.5.b., F1K.5.c. or F1K.5.d., then a zero time is recorded for the flight.

**F1K.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 recorded flight duration is less than 20 seconds.
- b) It is apparent to the timekeepers that a part of the model becomes detached during the launch or during the official flight time.
- c) If the motor stops during the waiting time in deciding flights (see F1K.8.b.)
- d) If, after the beginning of the waiting time (see F1K.8.b) until the end of the official flight, the motor adjustment or thermal condition of the tank is changed or influenced by any physical intervention.

**F1K.6. Repeat of an Attempt**

An attempt may be repeated when the model collides with another model in flight or a person (the competitor excluded) while being launched. Should the model continue its flight in a normal manner, the competitor may demand that the flight be accepted as an official flight, even if the demand is made at the end of the attempt.

**F1K.7. Duration of Flight**

The maximum duration to be taken for each official flight is to be two minutes. In the event of model recovery problems or to suit meteorological conditions, the Jury may permit the maximum for a round to be changed. Such a modified maximum must be announced before the start of the round.

**F1K.8. Classification**

- a) The total time of the five flights is taken for the final classification.
- b) In order to decide the individual placings when there is a tie, additional flights shall be made after the last flight of the event has been completed. The maximum time of flight in each additional round remains two minutes.

In the first deciding round, the motor must be started, then the competitor must wait with running motor for 60 or 120 seconds (defined by the organiser prior to the round), until the timekeepers give a sign to launch the model. The timing of the flight begins when the model is launched. In each further additional flight, the waiting time shall be increased by 60 or 120 seconds (defined by the organiser prior to the round) over the waiting time of the previous round.

- c) The organiser will establish a 15 minute period during which all fly-off competitors must start their motors and launch their models. Within these 15 minutes, the competitor will have the right to a second attempt in the case of an unsuccessful first attempt.

**F1K.9. Timing**

- a) See F1.2.
- b) The total time of flight is taken from the launch of the model to the end of the flight.

**F1K.10 Number of Helpers**

The competitor is entitled to have one helper at the starting position.

**F1K.11 Launching**

- a) Launching is by hand, the competitor being on the ground (jumping allowed).
- b) Each competitor must fill the tank, start his motor and launch the model himself.
- c) The model must be launched within approximately 5 m from the starting pole position.

## **F1L CLASS F1L - INDOOR EZB MODEL AIRCRAFT**

### **F1L.1. Definition**

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

### **F1L.2. Characteristics**

Wingspan, maximum projected .....457.2 mm

Wing chord maximum .....76.2 mm

Stabiliser area maximum .....50% 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.

- d) The model shall carry the FAI unique ID number of the competitor on the motorstick written with permanent marker or other non-removable means.

The competitor must be the builder of the models entered.

F1L.2.1 The "Builder of Model" rule shall apply to all F1L Competitions. The following allowances and restrictions to the BOM rule will apply:

F1L.2.2 The use of prefabricated flying surfaces (either pre-built or pre-covered) or pre-glued/pre-moulded subcomponents such as, wing/stab tips or outlines, , or preformed sheet wood props will not be permitted.

F1L.2.3 The use of preformed prop shafts, rear rubber hooks, thrust bearings, teflon washers, and mounting tubes (for wings, stabs, etc) will be permitted.

F1L.2.4 The builder may use premade raw building materials needed to craft the parts of the model such as sawn balsa wood, wire, composites, pultruded rod or tubing, adhesives, and covering material

F1L.2.5 Kits that include laser cut balsa parts will be permitted.

### **F1L.3. Number of Flights**

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

### **F1L.4. Definition of an Official Flight**

See F1D.4.

### **F1L.5. Number of Models**

See F1D.5.

**F1L.6. Collision Rule**

See F1D.6.

**F1L.7. Steering**

See F1D.7.

**F1L.8. Timing of Flights**

See F1D.9.

**F1L.9. Number of Helpers**

See F1D.10.

**F1L.10 Launching**

See F1D.11.

**F1L.11 Ceiling Height Categories**

See F1D.12.

## **F1M CLASS F1M – INDOOR BEGINNERS CLASS**

### **F1M.1. Definition**

As F1D.1 plus:

### **F1M.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 model shall carry the FAI unique ID number of the competitor on the motorstick written with permanent marker or other non-removable means.

The competitor must be the builder of the models entered.

F1M.2.1 The "Builder of Model" rule shall apply to all F1M Competitions. The following allowances and restrictions to the BOM rule will apply:

F1M.2.2 The use of prefabricated flying surfaces (either pre-built or pre-covered) or pre-glued/pre-moulded subcomponents such as a rolled motor tube, rolled tail boom, wing/stab tips or outlines, prop blade outlines, or preformed sheet wood props will not be permitted.

F1M.2.3 The use of prebuilt variable pitch prop hubs will be permitted.

F1M.2.4 The use of preformed prop shafts, rear rubber hooks, thrust bearings, teflon washers, and mounting tubes (for wings, stabs, etc) will be permitted.

F1M.2.5 The builder may use premade raw building materials needed to craft the parts of the model such as sawn balsa wood, wire, composites, pultruded rod or tubing, adhesives, and covering material

F1M.2.6 Kits that include laser cut balsa parts will be permitted.

### **F1M.3. Number of flights**

See F1D.3.

### **F1M.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.

### **F1M.5. Number of Models**

See F1D.5.

### **F1M.6. Collision Rule**

See F1D.6.

### **F1M.7. Steering**

See F1D.7.

### **F1M.8. Classification**

See F1D.8.

### **F1M.9. Timing of Flights**

See F1D.9.

### **F1M.10. Number of Helpers**

See F1D.10.

### **F1M.11. Launching**

See F1D.11.



**F1M.12. Ceiling Height Categories**

See F1D.12.

## **F1R CLASS F1R – INDOOR MODEL AIRCRAFT "MICRO 35"**

### **F1R.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.

### **F1R.2. Characteristics of Indoor Model Aircraft**

Maximum wing span of the monoplane model: 350 mm.

The model shall carry the FAI unique ID number of the competitor on the motorstick written with permanent marker or other non-removable means.

The competitor must be the builder of the models entered.

F1R.2.1 The "Builder of Model" rule shall apply to all F1R Competitions. The following allowances and restrictions to the BOM rule will apply:

F1R.2.2 The use of prefabricated flying surfaces (either pre-built or pre-covered) or pre-glued/pre-molded subcomponents such as a rolled motor tube, rolled tail boom, wing/stab tips or outlines, prop blade outlines, or preformed sheet wood props will not be permitted.

F1R.2.3 The use of prebuilt variable pitch prop hubs will be permitted.

F1R.2.4 The use of preformed prop shafts, rear rubber hooks, thrust bearings, teflon washers, and mounting tubes (for wings, stabs, etc) will be permitted.

F1R.2.5 The builder may use premade raw building materials needed to craft the parts of the model such as sawn balsa wood, wire, composites, pultruded rod or tubing, adhesives, and covering material

F1R.2.6 Kits that include laser cut balsa parts will be permitted.

### **F1R.3. Number of flights.**

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

### **F1R.4 Definition of an Official Flight**

See F1D.4

### **F1R.5. Number of Models**

See F1D.5.

### **F1R.6. Collision Rule**

See F1D.6.

### **F1R.7. Steering**

See F1D.7.

### **F1R.8. Timing of Flights**

See F1D.9.

### **F1R.9. Number of Helpers**

See F1D.10.

### **F1R.10. Launching**

See F1D.11.

### **F1R.11. Ceiling Height Categories**

See F1D.12.

## **F1S CLASS F1S SMALL ELECTRIC POWER MODEL AIRCRAFT “E36”**

### **F1S.1 Definition**

Model aircraft which is powered by an electric motor(s) and in which lift is generated by aerodynamic forces acting on surfaces that remain fixed in flight except to dethermalise. No control surface movements are allowed during flight.

### **F1S.2 Characteristic**

Only 2 cell Lithium batteries can be used. Other battery related specifications in F1Q.2 apply.

Maximum duration of motor run..... 7 seconds during the regular flights.

Minimum weight..... 120 g

Maximum wing span..... 91.44 cm (36 inches)

The number of models eligible for entry by each competitor is three.

F1S models may use radio control only for irreversible actions to control dethermalisation of the model. This may include stopping the motor if it is still running. Any malfunction or unintended operation of these functions is entirely at the risk of the competitor.

### **F1S.3 Number of flights**

a) Each competitor is entitled to five official flights.

b) See F1Q.3.b.

### **F1S.4 Definition of an official flight**

See F1Q.4.

### **F1S.5 Definition of an unsuccessful attempt**

See F1Q.5.

### **F1S.6 Repeat of an attempt**

See F1Q.6

### **F1S.7 Duration of flights**

The maximum duration shall be two minutes.

### **F1S.8 Classification**

a) See F1Q.8.a

b) In order to decide the individual placings when there is a tie, additional flights shall be made after the last flight of the event has been completed. The motor run will not exceed 5 seconds for all the deciding flights. The maximum time of flight for the first deciding flight shall be two minutes; increased by one minute for each subsequent flight.

c) See F1C.8.c

d) See F1Q.8.d

### **F1S.9 Timing**

a) See F1.2.

b) The timing of flights is limited to the durations specified in S.7 and S.8. The total flight time is taken from the launch of the model to the end of the flight.

c) The motor run must be timed either in flight or statically before the flight with quartz controlled electronic stopwatches with digital readout, recording to at least 1/100 of a second, reduced to the nearest 1/10th of a second below. The battery can be replaced after a preflight verification.

### **F1S.10 Number of helpers**

See F1Q.10

### **F1S.11 Launching**

See F1Q.11

## ANNEX 1 RULES FOR FREE FLIGHT WORLD CUP

### A1.1. Classes

The following separate classes are recognised for World Cup competition: F1A, F1B, F1C, F1D, F1E, F1N, F1Q, F1A Junior, F1B Junior, F1D Junior, F1E Junior, F1N Junior and F1Q Junior.

### A1.2. Competitors

All competitors in the specified open international contests are eligible for the World Cup. Only Junior competitors are eligible for the F1A Junior, F1B Junior, F1D Junior, F1E Junior, F1Q Junior.

### A1.3. Contests

Contests included in the World Cup must appear on the FAI contest calendar and be run according to the FAI Sporting Code. The contests to be counted for a World Cup in one year are to be nominated at the CIAM Bureau meeting at the end of the preceding year and are to be indicated on the FAI contest calendar. A maximum of two contests may be selected for any European country. A maximum of three contests may be selected for countries outside Europe. A country may choose to fly a World Cup event at a flying site in another country provided that the event is registered on the FAI online application following the prescribed procedure and both the hosting country NAC and the organising country NAC indicate approval on the online application. The name of the organising country must be included in the title of the event.

### A1.4. Points Allocation

Points are allocated to competitors at each contest according to their placing in the results and the number of competitors beaten according to the following items:

- a) The only competitors considered for the calculation of World Cup points are those who have recorded a time on at least one official flight during the competition. The number of these competitors is denoted by N and the place of an individual in this list is denoted by P.
- b) Points are awarded only to competitors in the top half of the results list (if N is the number of competitors, then points are awarded only for places 1 to N/2, rounding up when necessary in calculating the N/2 place, denote this number by H). Points are awarded without limitation according to N the number of competitors (reference C.2.2.3).
- c) The number of points awarded is 500 for the winner and linearly decreases to zero for the highest place competitor receiving no points. For the competitor in place P This is expressed by:

$$\text{points} = 500 * [ 1 - (P-1)/H ]$$

The points calculated are rounded up to the nearest whole number of points.

Additional points are awarded for the top three places subject to the requirement (b) to be in the top half of the results and subject to the number of competitors (N) being greater than 10: Place 1 receives 75 extra points, place 2 receives 50 points and place 3 receives 25 points.

- d) In the event of a tie for any placing, the competitors with that placing will share the points which would have been awarded to the places covered had the tie been resolved (round up the score to the nearest whole number of points).
- e) Each competitor awarded placing points is also eligible for one bonus point for each competitor they have beaten in the competition, but counting only the competitors with a flight time in round one of the competition. The number of people beaten by someone in place P is (N-P).
- f) For F1A Junior, F1B Junior, F1D Junior, F1Q Junior and F1E Junior points are awarded according to Junior classification.
- g) If a junior competitor scores more World Cup points in an F1A, F1B, F1C, F1D, F1E or F1Q open classification than he would be awarded in the Junior World Cup from the junior classification, then his Junior World Cup points will be increased to the same as his open classification points.

#### **A1.5. Classification**

The World Cup results are determined by considering the total number of points obtained by each competitor in the World Cup events. Each competitor may count the result of all competitions, except that:

- a) a maximum of two competitions can be counted from events flown in the same country in Europe (according to the venue of the competition, irrespective of the organising country). The best two scores are taken if a competitor has scored in more than two events in one country.
- b) a maximum of three competitions can be counted from events flown in the same country outside Europe (according to the venue of the competition, irrespective of the organising country). The best three scores are taken if a competitor has scored in more than three events in one country.

To determine the total score, up to four events may be counted, selecting each competitor's best results during the year.

In the event of a tie the winner will be determined according to the following scheme. The number of events counted will be increased from four, one at a time, until the winner is obtained. If this does not separate the tied competitors then the winner will be determined by considering the points obtained in the best four events multiplied by the number of competitors flying in each event. The winner is the one with the greatest total thus calculated.

#### **A1.6. Awards**

The winner earns the title of Winner of the World Cup. Certificates, medals and trophies may be awarded by the Subcommittee as available.

#### **A1.7. Organisation**

The Subcommittee shall be responsible for organising the World Cup and may nominate a responsible person or special subcommittee to administer the event.

#### **A1.8. Communications**

The World Cup Coordinator must receive the results from each contest in the World Cup and then calculate and publish the current World Cup positions. These should be made available via the FAI web site

#### **A1.9. Responsibilities of Competition Organisers**

Competition organisers must propose their event for inclusion in the World Cup when nominating events for the FAI International Sporting Calendar. The final selection of events from these proposals is made by the CIAM Bureau as defined in paragraph 3.

Immediately after the event, the competition organiser must send the results to the World Cup organiser, at least within one month as required in the CIAM General Rules C.13.6. Any failure to return results promptly will be reviewed by the CIAM Bureau when considering the competition calendar for the following year.

#### **A1.10. World Cup Board**

A Board of three persons shall be nominated by the CIAM Free Flight Subcommittee Chairman to rule on any issue concerning the implementation of World Cup rules during a year. Any such issue must be submitted in writing to the relevant Subcommittee Chairman. The World Cup Board is not entitled to deal with any kind of complaint or protest concerning a single competition, which must be considered by the FAI Jury for that competition.

## **ANNEX 2 A GUIDE FOR THE ORGANISERS OF FAI CONTESTS IN THE OUTDOOR FREE FLIGHT CLASSES**

This issue is based on the Guide approved in 1999 with modifications to reflect changes to the FAI Sporting Code Section 4 up to the 2015 edition and revised in 2016.

### **A2.1. Objective**

This document is intended to specify guidelines for the organisation of outdoor free flight international contests, for the benefit of both the organisers and the competitors. It is emphasised that recommendations are given and these do not have the same status as the binding regulations in the FAI Sporting Codes. However, since it is widely distributed and should be regarded as the standard for international competitions, organisers should avoid confusion by announcing in advance any changes from this guide such as may be necessary to suit local circumstances. These changes should be approved by the CIAM Bureau for a Championship or by the appointed FAI Jury for an Open International event.

This guide is applicable to World and Continental Championships in classes F1A, F1B, F1C and for Junior Championships at which F1P is flown in place of F1C. Organisers of Championships should note the administrative advice given in the CIAM General Rules on the organisation of Championships. For organisers of FAI Open International events, appendix A gives changes and comments appropriate to Open Internationals for classes F1A, F1B, F1C, F1P and also F1G, F1H, F1J, F1Q, and F1S.

Where this guide refers to the FAI Sporting Code Section 4 the relevant paragraph is quoted in brackets.

### **A2.2. Site**

A good flying site and suitable weather conditions are of primary importance to any free flight contest. The field should be flat and as large and as unobstructed as possible. A grass surface is best and there should be a minimum of dusty or rocky surfaces which can damage models. Its adequacy should be measured in terms of the likely distance which will be flown by models making good flights in thermals in the range of weather conditions to be expected for the contest. It should be noted that in a steady wind of 9 m/sec a model will travel over 3.5 km in a flight of 6 minutes and a flight of this duration may result from a 3-minute maximum flight taken high in a thermal or a fly-off flight to a longer maximum. However, weather patterns should be such that these high winds are unlikely. Where it is possible that some flights might leave the field, consideration must be given to the feasibility of retrieving models from the surrounding terrain.

Other aspects affecting the suitability of a site include (not in order of priority):

- a) the model retrieving conditions on the field;
- b) the ease of access for competitors arriving by road or by public transport and via international ports and airports;
- c) the availability of adequate accommodation for all competitors, team managers, officials, and at least some supporters and helpers;
- d) the time taken to travel between the official accommodation and the flying site (desirably this should be less than 30 minutes);
- e) the availability of local hotels and camp sites for additional supporters;
- f) the possibility of parking vehicles on the field;
- g) local practice facilities if the field is unavailable prior to the start of official practice.

When proposing a site in a Championships proposal to the CIAM, the National Aero Club must give a detailed description of all the aspects discussed above and follow the procedure defined in CIAM General Rules .15.3. The accommodation and camping facilities must be described and the entry fee stated, split into an obligatory part (C.15.5.1) and an optional part for food and accommodation (C.15.5.2). These fees may be justified to CIAM by including an estimated income and expenditure budget for the Championship. CIAM should be given a detailed summary of weather conditions at the time and place of the proposed event, compiled by the official meteorological organisation of the country and covering such aspects as the distribution of wind speed and direction throughout the day, range of temperatures, sunshine and rainfall. Note that the decision on the location of a Championship is normally decided two years in advance of the event (C.15.3).

It should be arranged for a CIAM representative from another country to visit the flying site and facilities (preferably at the same time of year as the Championships); this official may be a member of the CIAM Bureau, or the Chairman or a member of the CIAM Free Flight Subcommittee, a CIAM Delegate, or a member of the FAI Jury at a recent Free Flight Championships. In the case of CIAM Delegates or CIAM Bureau members the chosen representative should have recent free flight knowledge. The CIAM representative should discuss the site with internationally known and respected modellers who fly FAI classes and regularly use the proposed site.

Well in advance of the event information should be sent to National Aero Clubs and members of the FAI Jury including a description of the site and any special features. Maps should be given showing the location and coordinates of the flying field, the accommodation and arrival registration point relative to roads and local towns and also a detailed map of the flying field with its entrances and any restricted access areas.

### **A2.3. Timetable**

The time of year for the contest should be chosen so that the flying conditions, ground surface conditions, temperature and weather may be expected to be agreeable for the majority of competitors. Times of year in which intense thermal activity or strong winds are probable should be avoided, or alternatively there should be adequate daylight available to allow contest flying to be suspended during the part of the day when thermals and wind are at their strongest (C.17.1).

The first day of a championship is for arrival and registration. The location of the registration office should signpost and be indicated on a map included in the bulletin. At registration the participants should be given all relevant information, such as maps, schedules, lists of participants, competitors' numbers, meal tickets and accommodation details.

It is required (C.16.1.d) that at least one practice day be provided before the contest. Model processing must be carried out according to F1.3.1 for the number of models (C.10.1) allowed for each competitor. Specific measurement of the model characteristics is not required before the event (F1.3.1) but competitors have the right to have official checking of launching cables, rubber motors, swept volume of piston motors, and model minimum weight. To facilitate the smooth running of processing a schedule should be established with equal slots available for each team. During registration teams may choose their preferred slot from the times remaining available on the schedule. During processing the competitors will have to give the certificates of the four models entered in the competition. The organiser will mark these four models with a unique stamp or sticker. If a stamp is used it is essential that it is with a permanent ink which does not wipe off under the effect of rain, model fuel or lubricants. The organiser should record the identification of the models entered and this should be marked on the score card to be used for that competitor. If a competitor wants to replace one of these four models, he will have the right to do so up to one hour before the start of the contest (C.12.c). In this case, he must present to the organiser the corresponding certificate for the new model. The time and place should be clearly indicated for any additional model checking which a competitor may request.

The normal schedule for Championships is for one day to be allotted to each class F1A, F1B, F1C/P. The order is no longer specified by the Sporting Code. Consideration should be given to the numbers involved in each class and the likelihood of flyoffs which could extend to the following day. F1A usually has the largest number of competitors and the day when the organisers consider it will be more convenient to have the maximum number of timekeepers available is one factor in deciding the order.

On each day time is required during the daylight hours for the basic rounds plus any fly-off rounds. It is possible to commence the contest before sunrise in order that there may be an interruption during the part of the day having most wind or thermal activity (C.17.1). The starting time chosen may be constrained by the catering and accommodation facilities and also the need to avoid making the hours too rigorous for all participants, but these are secondary constraints compared with the requirement to hold the flights during the best possible conditions. It is indeed a formal requirement that at least two rounds take place when wind and thermal activity are expected to be at a minimum (C.17.1). The normal round duration is one hour and there should be a short break of at least 10 minutes between each round, to allow for the time taken by competitors moving to new launch poles and by the administration of timekeeping. A longer break should be allowed if wind direction changes may require moving the starting line during the day.

For the fly-off rounds adequate time should be allowed between rounds for the preparation and recovery of models in the expected range of meteorological conditions; the gap between successive fly-off rounds should be at least 30 minutes on even the best flying site. If daylight

time may be too short to allow completion of the fly-off process in one evening, contingency plans should be established for completing the process during the following day. To cater for delays in the competition due to the weather, long fly-offs or other reasons, it is essential to allow at least one free day after the scheduled end of flying and before the conclusion of the Championships (before presentation of prizes and departure of competitors).

An alternative timetable that has been used to suit local weather patterns is to hold the rounds during the morning of one day followed by the flyoff on the next morning. No other flights are made that day and the next class starts on the following day. This gives a relaxed schedule with flying in good conditions followed free afternoons each day, but it does increase the number of days required for the championship.

The published timetable should include the starting and finishing times of the rounds and also the fly-off rounds for each class. Besides the schedule for flying, the timetable should also include the time and place of:

- a) a meeting of the organisers with the team managers after arrival and also in the evening before each contest flying day;
- b) model processing,**
- c) briefing meetings for the timekeepers for each class;
- d) an opening ceremony, at a time not infringing upon model checking or practice periods
- e) an awards presentation ceremony for the award of FAI Trophies and Diploma to the winners.

It is important that at least some members of the FAI Jury are invited to and are present at each of these functions, that is: each team managers' meeting, model processing, each timekeeper briefing, the opening and the awards ceremonies.

Copies of the timetable should be distributed at least 2 months in advance to National Aero Clubs, with points of detail supplied, if necessary, in hand-outs to all participants upon arrival at the event.

#### **A2.4. Flying Site Organisation**

This section of the guide concerns the running of the flying site on contest days. While split into a number of headings here, it is essential that all aspects of the organisation work closely together.

##### **A2.4.1. Officials**

Separate spheres of duty require a contest director, a chief timekeeper and a site organiser. The contest director takes overall control and is responsible for contact between the team managers, chief timekeeper, the model processing staff, other officials and the FAI Jury. He should arrange for contacting the Jury in the event of a protest being received. The chief timekeeper is in charge of all aspects of timekeeping and recording and displaying scores, discussed in section 5 of this guide. The site organiser takes care of administrative and logistic matters not immediately impinging on the contest flying.

The organisers must provide timekeepers for each launch position (two per position for Championships, at least one per position for Open Internationals). An additional timekeeper must be provided at each position for fly-offs (F1.1.2). If foreign timekeepers are available, they will be used as a priority and should provide their own equipment (tripod, stopwatches and binoculars) (F1.2.1).

Interpreters must be available at all stages of the Championships to allow communication between the main officials, team managers and the FAI Jury. An essential minimum is to ensure that these three categories of peoples are able to communicate via the official languages specified for the Championships; the smooth running of the event is aided by also supplying interpreters for teams which are unable to converse in any of the official languages.

##### **A2.4.2. Starting Line**

It is necessary to make a draw to determine the starting position of each team in the first round (F1.1.1.b). It is usually most convenient to make the draw by a random electronic ordering of the nations entered in the championship in the presence of the FAI Jury. The list of starting poles can then be printed and distributed at a team managers meeting. Since the defending champion does not have a team manager, it is customary to adjust the draw so that the defending champion is on a pole next to that of the national team from his country.



The Sporting Code specifies the spacing between launching positions on the starting line (F1.1.1). These positions should be clearly marked in a secure way, but in such a way that it is possible to move the line to allow for wind changes. One successful solution is to have ground markers for each starting position attached to a cable at the correct spacing: the complete cable can then be towed to a new launch position when required and without any additional need to recheck the spacing.

A good way to facilitate line changes due to wind shifts is to have a spare cable with ground markers attached, in order to prepare the new starting line before the end of the running round. This gives the possibility to save time to move the line, the new line being ready before the end of the previous round.

The only other items required to be kept at the starting line are the timekeepers' equipment and containers for impounded accessories (fuel).

#### A2.4.3. Launching Area

There should be clear markings to keep spectators at least 25m away from the starting line (F1.1.1.c) in the directions upwind, downwind and across wind from each end of the line. In the case of F1A the upwind limit should be at 75m to allow for the towline length. No substantial fixed structures should be permitted within this area, neither those erected by the competitors nor the organisers, and anything higher than 2 metres should be quickly collapsible. Competitors should place their model boxes, winding supports, starters, etc, at least 10m from the line (downwind of the line for F1A, or upwind of the line for F1B, F1C and F1P). An official should be designated by the contest director to monitor obstructions and the number of people in the launch area. Under rules F1A.10, F1B.10, F1C.10 a competitor is allowed one helper at the launching pole, plus the team manager and assistant team manager.

During the rounds test flying is not allowed near the starting line or upwind of the starting line. The Organiser shall specify an area to be used for test flying during the rounds. (F1.1.1.d)

#### A2.4.4. Retrieving

Advance literature should specify the aids which competitors may use when chasing and returning models. Limits should be specified as to where mechanical aids, such as cycles, motor cycles, cars, may be used and parked. They should not be allowed in the launching area nor should they be left in a position where they may obstruct the timekeepers' view of models. For safety reasons it should be forbidden for people to chase models in flight with motorised vehicles unless there are at least two people (one to drive and one to observe the model). Some teams usually employ radio aids when retrieving models and it should be specified in advance which frequencies will be available.

#### A2.4.5. Equipment

An official clock, reading to the nearest second, should be used to time the rounds. It should be accurate throughout the day and should not be adjusted after the start of the contest. The clock should be available for reference by competitors and defines the timetable as published, unless changes have been announced. The start and finish of rounds should be marked by audible and visible signals, such as flares. The form and exact timing of these signals must be defined in advance (for example, the round starts or finishes at the moment the flare bursts). A public address system is helpful for communications from the organisers, calling for the Jury, making additional announcements on round times, time remaining in the round and such like. If used for communications for competitors it must be audible at all points on the starting line and announcements must be made in all official languages.

A meter should be available to measure wind speed and preferably should have calibration confirmed by a recognised agency or procedure. The meter should be held or mounted at 2m above the ground and should be monitored throughout the contest. The Jury must be informed if the wind speed approaches the advisory limit (F1.5.1).

The equipment required for timekeeping is described in section 5, but note that the organisers have a responsibility to ensure that all timekeepers are fully equipped - either by providing them with the equipment or confirming that they have and will bring adequate equipment of their own. Particularly note the requirements for electronic stopwatches (C.16.1.j and F1.2.4) and tripods (F1.1.2 and F1.2.7.a). The organisation must have equipment necessary for processing the times recorded by the timekeepers. A scoreboard is essential for displaying the latest results and should be large enough to be read by a group of people at any one time. It is desirable to have an internet connection to allow uploading latest scores to an internet web site. Processing requires separate facilities for spot checking models and checking new towlines or rubber motors

- see section 4 of this guide. The containers for fuel must be kept at the starting line under the control of the timekeepers.

The organisers shall provide fuel for F1C, at cost for practice flying and free for use in the competition (C.13.7). The fuel must be requested in advance (at the time of entry). Competitors have a choice of either castor oil or synthetic oil, their choice must be indicated when the fuel is requested on the entry form. Fuel supplied by organisers shall be mixed from top quality material. Methanol shall be at least commercial grade without additives. Castor oil shall be first pressing castor oil. It is recommended that a small container is used for combining the oil and methanol (such as 2 litres of fuel in a 3-litre container), this should be thoroughly mixed then transferred to a large container, repeating until enough fuel is available. The fuel mixes most easily if the temperature is at least 20C and humidity should be low to avoid the methanol absorbing water. The fuel should be transferred to small bottles for sale to competitors for testing or for use at the competition. The means of distributing the fuel to competitors must be arranged.

The organisers must be able to transport all the equipment to and across the flying field, with vehicles suitable for the terrain and able to transport it to any position on the field which may be required according to wind direction.

The organiser must have available a suitable stamp or stickers for identifying the models after registration (F1.3.1.a).

The organisers should make available small stickers for competitors to place on their models to give instructions in the local language of action to take if finding a model, these to be available at the time of registration. To aid competitors who are training before registration, early availability of the stickers is helpful, or alternatively the text of the stickers could be published in a bulletin before the event to allow competitors to prepare their own stickers.

#### A2.4.6. Facilities

Refreshment, toilet, and first aid are desirable facilities on the flying field and should be kept well away from the launching area and from the areas in which models may land. The provision of fire-fighting equipment may be appropriate if the field has a high fire risk, and in any case a means of contacting the local fire service must be defined. Arrangements should be made to supply food and drink during the day to competitors and the arrangements for this must be announced in advance. Any meals during the competition should be light meals and easy to distribute, such as packed lunches. Car parking should be designated so as not to interfere with flying but with regard to easy access to the starting line for competitors.

#### A2.5. Model Checking

There are four phases to this operation with the following requirements:

- 1) The first phase involves checking the competitors and their model certificates on arrival, entails:
  - a) check that the competitor holds a valid FAI Sporting Licence issued by his National Airports Control in accordance with the Sporting Code (C.6). This requires checking that licences are recorded on the FAI licence database. If the Sporting Licences are impounded during the event, plans should be drawn up for returning them at the end of the competition.
  - b) check the FAI Model Specification Certificates for up to the maximum number of models which may be submitted by each competitor (C.10.1, C.12.a)
  - c) in the case of models not correctly processed the organisers must carry out this processing (C.12.b).
  - d) check that there is an FAI sticker on each model and equivalent markings on every main part of each model in agreement with the corresponding certificate and identifying each model with a unique code with the letters or numbers of the required size (C.11.1.a.ii). Confirmation of this check should be shown by marking across the edge of the sticker and the model with an indelible special symbol or stamp of the organisation (F1.3.1.a). The identifying letters or number (unique code) on the four models of each competitor should be recorded on the score sheet which will be used for recording the flight times for that competitor. This helps the timekeepers to check and record the identifying code of the model used for each flight.

- e) check that the Olympic identification and FAI national licence number or FAI Unique ID number of the competitor appears on the wing of the model and is of the correct size (C.11.1.a.i).
  - f) allow competitors to measure model characteristics on the official processing equipment (C.16.1.c)
- 2) The second phase involves allowing competitors to check on towline length, rubber motor weight, piston motor swept volume and model minimum weight on the official processing equipment (C.16.1.c and F1.3.1). The team managers should be informed of the arrangements for carrying out this checking, which may be made both according to a schedule and also at any other time requested by the competitor (but possibly subject to more delay in that case).
- 3) The third phase of checking requires that during the competition the organiser should:
- a) process the important characteristics of at least 20% of the models (C.12.d), including the towline length for F1A and the rubber motor weight for F1B. The models checked should be chosen at random and it should be done in a manner so as not to inconvenience or hinder competitors; it is best to briefly impound and check a model immediately after it has made an official flight. Advance notice of the check should not be given. The competitor and/or the team manager should be present during the processing. The results of these checks should be recorded.
  - b) provide facilities for checking extra towlines and rubber motors in addition to those checked under (2). This may be required for the convenience of competitors at any time.

Note that these checks are in addition to the model identification checks which the timekeepers make before each flight

- 4) The final phase comes after provisional results have been achieved. It requires checking of all the characteristics of each model used by competitors placing first, second and third (C.12.e). It is prudent to impound at least the fourth-place models as well, for processing in case of any disqualification in the first three. It is possible that the rechecking be carried out at the flying site if good facilities are available there for accurate measurements; alternatively, the models should be impounded at the flying site and taken for processing at the chosen site.

The equipment required for processing thus includes:

FAI model certificates and stickers, item (for item 1.c above);

A means of marking registered models

Means of accurately weighing models and rubber motors Scales should have been calibrated and digital scales should read to at least 0.1g for model weighing and 0.01g for weighing motors, items (1.c), (2), (3.a), (3.b), and (4);

Means of measuring models and computing the projected area, both on and off the flying site, items (1.c), (3.a), (3.b), and (4);

A measure for accurate determination of the 50m maximum towline length and a means of applying the specified tensile load when checking the towlines, (1.c), (2), (3.a), (3.b), (4);

Accurate instruments for measuring motors and calculating the motor capacity, items (1.c), (2) and (4);

Official fuel for class F1C, needed for practice and the competition (F1C.2, C.13.7);

A means for dispensing the official F1C fuel to competitors during the competition. Fuel bottles should be clearly marked to indicate their contents, not to be confused with drinks.

#### A2.5.1 Motor volume

To determine motor swept volume the stroke and bore of the motor must be measured accurately with precision engineering tools. Note that (B.4.24) defines that the swept piston area is calculated from measurements of the bore of the liner at the top dead centre. One recommended technique is to:

- a) Rotate propeller to be at top dead centre position and keep in this position
- b) Remove head and measure distance from top of head to piston, zero calliper reading
- c) Rotate propeller 180° to bottom dead centre position

- d) Measure distance from top of head to piston, calliper reading now gives stroke
- e) Rotate propeller to top dead centre and measure diameter at top of piston
- f) Repeat all measurements and confirm consistent results

The swept volume is then found by multiplying the swept piston area by the stroke. These calculations to determine capacity must use the full accuracy of the measured dimensions.

When the swept volume has been determined, B.4.24 specifies that the calculated volume must be truncated to two decimal places. This means that the figures in third and later decimal places are deleted and the result compared to the maximum of 2.5cc specified in (F1C.2) or 1cc in F1P.2. The following examples are given to clarify the procedure:

calculated volume	2.496	2.5004	2.5084	2.5102
truncated volume	2.49	2.50	2.50	2.51
within specification?	yes	yes	yes	No

## A2.6. Timekeeping

This is a most important aspect of any free flight competition. The people chosen for duty as timekeepers should have good eyesight and have some experience of the task, preferably being active free flight aeromodellers. They should be familiar with the rules of the event; to reinforce this, a detailed briefing meeting should be held on the evening before each event and the timekeepers should be issued with copies of the rules and a briefing sheet, such as presented in Appendix B.

The best method of allocating timekeepers is for a pair to be assigned to each starting line position and to time all flights at that position during the entire competition. In conjunction with this the competitors move from one pole to another between rounds (F1.1.1) and thus each pair of timekeepers take duty for a different team for each round.

The timekeepers retain custody of impounded items (fuel and any receptacles used by the competitors to hold their working supply of fuel) at their pole for the duration of a round and at the end of the round they should ensure safe and prompt transfer to the timekeepers responsible for that team in the next round. Competitors must be allowed free access to their impounded items at all times but the timekeepers must watch that no possibility of tampering arises. The organisers should regularly communicate with their timekeepers, so that they do not need to leave their position during rounds for such things as transmitting results or collecting refreshments. A few spare timekeepers should be available to cover for any timekeeper who must unavoidably leave his position during the day. It is most important that all timekeepers should be in position before the start of each round. Arrangements must be made to ensure custody of impounded items in the event of long breaks in the flying, such as during poor weather or over a lunch break.

Equipment required for each timekeeper includes: a pair of binoculars meeting FAI specifications (F1.2.7), at least one stopwatch of specified type and accuracy (C.16.1.j, F1.2.4), results cards on a board with pens, briefing sheets, a means of identification to competitors and team managers, and a chair (for comfort when possible to relax between flights during a long day). Note that a second stopwatch is required for each timekeeper in F1C and F1P to time motor runs or lap split timing should be used. A tripod for supporting binoculars is an advised additional item of equipment.

The timekeepers should write down the results in exactly the form in which it is recorded on the stopwatch (for example, as minutes and seconds) to avoid conversion errors. The results sheets may include a second copy facility so that a copy of the recorded result for each flight may immediately be given to the team manager, or a box for the team manager to sign to indicate agreement with the time. In the event of any question about the recorded time, the timekeepers should write down the exact readings of all watches (to hundredths of seconds). This will be used for the CD and Jury to check the official time. After the results have been recorded the sheets should be collected by a runner and taken to a central scoring office. Here any appropriate conversions should be made (for example, into seconds) and the score recorded on a master sheet. If a computer is being used for processing the results, the scores should be entered into it after recording them on the master sheet and programs should obviously be carefully checked and regular copies of data made to safeguard the smooth and accurate preparation of the results. A public scoreboard should be updated to show latest individual and team scores and positions as soon as possible (C.16.1.f). A coloured (red) dot on the scoreboard in place of a maximum (or writing the number in red) simplifies seeing those with full scores. The latest scores and positions should be uploaded to the internet if possible. Written copies of the results should be prepared at the close of the event; these must be sent to the FAI and National Aero Clubs (C.13.6) and

should also be handed out at the awards ceremony to the FAI Jury, team managers, competitors, supporters and press representatives.

#### **A2.7. Organisation of flyoffs**

There may be pressure of time to prepare for flyoffs, particularly subsequent flyoffs quickly following the first flyoff. A simple way to undertake the draw for the flyoff is to group together all the score cards of the eligible competitors face down and have the jury draw cards from the pack to determine the competitor at pole 1, pole 2, etc.

#### **A2.8. Opening and Closing Ceremonies**

It is desirable to keep all ceremonies short and readily understood in all languages. See the definition C.15.7.

The key elements of an opening ceremony are introduction of the teams and welcoming remarks by the organisers and the president of the FAI Jury. Depending on the number of teams it may not be desirable to play the anthem of each country. If requested the team managers should have brought recordings of their national anthem. For any country not bringing an anthem it is recommended that the FAI anthem be played in their case.

At the beginning of the opening ceremony, as soon as the teams are at their places, the FAI anthem is played, and the FAI flag raised. At the end of the ceremony, the President of the FAI Jury declares the Championship open, and the national anthem of the organising country is played.

The prize-giving should be separate from any closing banquet, so that it may be attended by all participants independent of whether they buy tickets for the meal. The key preparation for the prize-giving is to have all the trophies, medals and diploma available for presentation, with the diploma completed with the winners' names. There should be a rostrum or other central area or stage for presentations to the winners which allows suitable views for photographers. After presentation of the awards in each category, the national anthem of the victor should be played while the flags of the top three nations are raised or displayed. Closing remarks by the organisers and the president of the FAI Jury complete the prize-giving.

At the end of the ceremony, the FAI anthem may be played, and the FAI flag presented, as a symbol, to the team manager of the next organising country.

In planning any closing banquet, it should be remembered that the main enjoyment of participants is meeting one another and talking together. To assist in this, it is not desirable to provide major special performers or speeches or loud music for the dinner. At any Championship, if alcohol is free of charge, soft drinks should also be free of charge. At Junior Championships high percentage alcohol must not be free of charge.

## **ANNEX 2, APPENDIX A**

### **A GUIDE FOR THE ORGANISERS OF FAI OUTDOOR FREE FLIGHT OPEN INTERNATIONALS**

There is a degree more freedom possible in the organisation of Open Internationals than there is for Championships, but this does not diminish the organiser's responsibility to run an event according to FAI regulations. There is a greater need to ensure fair arrangements for all competitors since they are not assisted by the formal representation through the team manager that they have at a Championships.

Many of the points given in the Guide for Championships organisers are still appropriate to Open Internationals and in the following Guide emphasis is placed on the differences.

#### **A2A.1. Site**

A good flying site is as important for an Open event as it is for Championships. The major point of difference is that there is no requirement to supply official accommodation and catering. This places increased emphasis on the need for hotels and camp sites near to the flying site.

The inclusion of an event on the FAI Contest Calendar does not require a detailed presentation to CIAM, but general information together with the entry forms should be sent to National Aero Clubs and to any individual requesting them. Detailed maps showing the location of the flying field and the registration office should be sent to all competitors. If competitors will be required to assist in timekeeping, then this must be explained in the advance information bulletins. Entry forms should give the possibility to identify the junior competitors, in order to identify them in the general classification and make a special junior classification if the number of juniors participating in each class is greater than three (C.13.5).

Score cards should be similar to the ones used for World or Continental Championships, with a special place for timekeepers to record the code of the model flown at each round by each competitor.

#### **A2A.2. Timetable**

It is equally necessary to choose a time of year which is likely to give good flying conditions and to arrange the timetable to avoid periods of strong winds or intense thermal activity.

The best schedule is to follow the Championships style, with a practice day followed by one contest day for each class and with a free day available for completion of the event if there have been any delays. However, there is usually pressure to follow a shorter timetable than this and two possible arrangements for fitting events F1A, F1B and F1C into two days are now suggested:

- a) Flying F1A on one day and F1B plus F1C on the other day. The popularity of F1A means that there is a similar total number of competitors on each day. However, it is preferable not to have F1B and F1C models flown together. Separate starting lines should be established for each class.
- b) Flying all classes in rounds at the same times. This requires three separate starting lines for the three classes and a large number of timekeepers. It is difficult for competitors and helpers involved with different classes, but it allows a competition to be completed in one day.

As well as the times of all rounds, the timetable should include the time and place of competitor registration and the awards presentation ceremony, together with any model checking and opening ceremony that may take place. Copies of the timetable must be sent out with entry forms.

Note that under World Cup rules (Volume F1 Annex 1 para1) F1P models may be flown alongside F1C in World Cup Open Internationals. The F1P models are flown to their class rules except that the maximum flight time must be the same as the F1C flights. The F1P results are included with the F1C results for F1C World Cup scoring and also count for F1P Junior World Cup for junior flyers.

#### **A2A.3. Flying Site Organisation**

The comments under this heading in the Championships Guide are equally applicable to Open Internationals.

**A2A.4. Model Checking**

All of the comments on model checking for Championships remain valid for Open Internationals, but it is usual to place greater emphasis on checking having been carried out in advance by the competitors' National Aero Clubs. To back up this it is important that the competitors have access to any official processing equipment (C.16.1.c), the spot checks are carried out (C.12.d) and the models of the top three placing competitors are checked in detail (C.12.e).

**A2A.5. Timekeeping**

This is often a most difficult part of an Open International. The timekeepers should be experienced free flight aeromodellers with good eyesight and be familiar with the rules of the event. They should be issued with copies of the relevant rules and a briefing sheet on the style of Appendix B.

Supplying an adequate number of timekeepers for an Open International is often more difficult than for a Championships - there may be a much greater number of competitors and the organisers may have smaller resources of manpower available. Starting pole positions should be allocated by draw for the first round, but with the possibility of constraining the draw to select people able to speak the same language at each pole as far as possible. Competitors at a pole fly one at a time in an order preferably established by mutual agreement of the competitors for each flight; in the event of disagreement at a pole, the official timekeeper at that pole may impose a flying order, subject to appeal to the FAI Jury.

It is preferable that the organisers supply at least one official timekeeper at each starting position in order to retain custody of the score cards, to observe that correct procedures are followed and to act as a contact point at that position. At least one official timekeeper at each position should be able to converse in one of the official languages of the event. Two timekeepers are required for each official flight; in the event of the organisers not supplying both timekeepers per position, then the required timekeepers should be other competitor(s) flying from that position or a helper of the other competitors. The official timekeeper at the position should ensure that all competitors undertake their fair share of help in the timekeeping and that there is always someone ready to help him time the next flight. Any dispute in undertaking timekeeping help should be referred to the FAI Jury and the organisers should be able to call upon a small number of additional timekeepers to allow timekeeping to continue at the pole during a dispute.

It is not permissible to reduce the timekeeper requirement by increasing the number of competitors at each starting position. Sufficient positions should be established to allow each competitor at least 10 minutes to fly if the round time is evenly distributed between all the competitors. The official timekeeper should draw the attention of the FAI Jury to any competitor taking a significantly longer time to fly than his fair allocation of round time.

Since the official timekeeper at each pole may be more actively involved in organising activities at his position than is the case at a Championship, it is even more important that the contest director arranges good communications with the timekeepers. There should be a frequent runner service between all the timekeepers and the contest director and clear audible or visual signals should be available for the timekeeper to call the contest director and hence the FAI Jury in the event of any difficulty.

The requirements for processing scores and for timekeeping equipment are the same for Open Internationals as described previously for Championships. It is important that when competitors assist in the timing of flights they should be correctly equipped with stopwatches and binoculars according to the FAI specifications. Familiarity of operation is important with these devices and so they should supply their own stopwatches and binoculars if these are acceptable, otherwise they should observe a flight with spare equipment supplied by the organiser and held by the official timekeeper.

## **ANNEX 2, APPENDIX B**

### **OUTDOOR FREE FLIGHT TIMEKEEPER BRIEFING INSTRUCTIONS**

The duty of timekeepers is to fairly observe and record the times of flights by the competitors. In the course of this they must follow the rules of the FAI Sporting Code and also must ensure that the flights are made in accordance with the Sporting Code. To achieve true sporting results it is essential that the timekeepers act so as to give the competitors the greatest possible opportunity for making their flights.

On a day prior to the competition, the organisers should hold a meeting to brief the timekeepers, to discuss the rules and explain the logistics and operating procedures to be followed during the event. A list of timekeepers allocated to each starting pole should be distributed.

There follow some detailed points on the task of timekeeping, specifically aimed at timing in Championships but also applicable to Open Internationals (see the closing note).

#### **A2B.1. Start of Competition**

The timekeepers must be present at their specified starting line position (pole) at least 10 minutes before the start of the first round. They should have collected - or have been brought by the officials - stopwatches, binoculars, tripod (one per position), score cards, pens, impounded equipment, chairs and any other personal needs.

#### **A2B.2. Impounded Equipment**

In class F1C standard fuel must be kept under the control of officials at all times but competitors should be given access before the start of each round. This is to enable them to be prepared and ready to fly at the start of the round: F1C fuel may be taken, the fuel tank rinsed and filled.

More than one competitor may access the impounded equipment at any one time during the competition provided that the timekeepers retain supervision of the items. Between rounds one timekeeper should take a team's impounded equipment to that team's next pole while the other timekeeper waits at his pole for delivery of the equipment of the next team to fly at that pole.

#### **A2B.3. Preparing to time a flight**

When a competitor is ready to make a flight, the timekeepers must check his name and number on their score card. The identification number or letter on the model must be checked, compared with those shown on the score card and recorded as the identification of the model used for that flight. Timekeepers must check that the model has been identified (stamped or marked) by the organisers at Championships. Timekeepers must check that the Olympic identification of the country of the competitor is written on the wing of the model, as well as the FAI licence number (or national number) of the competitor. This is particularly necessary, even at open World Cup Contests.

Timekeepers must study the shape and colour of the model to aid recognition. They should check the focus of their binoculars and zero their stopwatches.

#### **A2B.4. Timing a flight**

The timekeepers must check that the flight is launched after the start and before the finish signal for the relevant round. They should also check that the model is launched within 5m of the launch position (note that the model may be taken further away before launching but must return within 5m of the pole at the moment of launch).

The model should be watched carefully and continuously during the flight. Special attention should be given to the flight counting as an attempt for any reason or to detecting a collision; if either of these arise then the team manager must be informed immediately.

In the case of F1A the team manager should be informed if the model is too far away for the moment of release to be seen. Likewise, in F1C, a motor run that is too long should be reported immediately to the team manager. It is difficult to accurately time motor runs; timekeepers should endeavour to make their best judgement of the moment when the motor stops, usually by listening to the sound of the motor and not being influenced by model attitude. If the noise of other motors running mean that an accurate motor run time cannot be measured, then this should be acknowledged and the benefit of doubt given to the competitor rather than recording an inaccurate long time.

The Sporting Code directions for using binoculars during a flight should be followed as appropriate. It is important that the binoculars are used early enough in the flight that there is no



difficulty in picking out the correct model. A tripod should be used to support the binoculars if available, this is particularly helpful when timing a long fly-off flight or when the wind is strong.

If there is the chance of a model being lost from view behind a local obstruction then the timekeepers should move as far as allowed (10m radius) in order to keep the model in sight for as long as possible (F1.2.5). Any distraction of looking at the stopwatch to check progress of the flight should be avoided, since this implies looking away from the model itself.

Timekeepers should stand up for timing before obstacles or persons might obstruct the view of low flying models.

#### **A2B.5. Recording a flight**

If the flight was an attempt then this should be recorded on the score card. At the end of an official flight the mean of the time recorded on the two stopwatches should be calculated and recorded to the nearest whole second. If the score card allows, the time should be recorded directly in minutes and seconds as shown on the watches and also as converted to seconds. In a Championship the team manager should be shown the time recorded and he should sign to indicate that he has seen the time. The flight should be recorded as quickly as possible if there are other competitors waiting to fly. The completed score cards should be collected from the timekeepers by an official for taking to the central scoreboard and recording position.

#### **A2B.6. Disputes**

A dispute that cannot be resolved between the timekeepers and the team manager must be referred to the contest director or the FAI Jury. The timekeepers should not leave their post during a dispute but should continue to time as required by other competitors at the pole. If a dispute is not resolved during a round and the competitor could be entitled to a reflight if his protest is upheld, then the timekeepers should time a reflight. The time should be recorded separately in case it is required when the dispute has been settled. This must be done before the end of the round.

In flyoffs a dispute can be solved by data as recorded by data recorded by an electronic altimeter. This dispute must be marked on the scorecard for the disputed flight time of the flyoff round.

#### **A2B.7. Open Internationals**

Duties of timekeepers are similar to those at Championships. There may be only one official timekeeper at a pole and the other timekeeper must then be drawn from the competitors waiting to fly, etc. Score cards should be kept by the official timekeeper and it is he who settles any dispute between competitors at his pole, such as concerning the flying order or the time taken to fly.

## ANNEX 3 A GUIDE FOR THE ORGANISERS OF FAI INDOOR FREE FLIGHT COMPETITIONS

This issue is based on the Guide approved in 1999 with modifications to reflect changes to the FAI Sporting Code Section 4 up to the 2016 edition.

### A3.1. Objective

This document is intended to specify guidelines for the organisation of indoor free flight international contests, for the benefit of both the organisers and the competitors. It emphasised that recommendations are given and these do not have the same status as the binding regulations in the FAI Sporting Codes. However, since it is widely distributed and should be regarded as the standard for international competitions, organisers should avoid confusion by announcing in advance any changes from this guide such as may be necessary to suit local circumstances. These changes should be approved by the CIAM Bureau for a Championship or by the appointed FAI Jury for an Open International event.

This guide is applicable to World and Continental Championships in class F1D. Organisers of Championships should note the administrative advice given in the CIAM general guide on the organisation of Championships. For organisers of FAI Open International events, appendix A gives changes and comments appropriate to Open Internationals for F1D, F1L, and F1M classes.

Where this guide refers to the FAI Sporting Code Section 4 the relevant paragraph is quoted in brackets.

### A3.2. Site

A good flying site is of primary importance to any indoor competition. In fact, there are so few sites suitable for F1D that the availability of a suitable site is central to the whole concept of organising a Championships. The main determining factor governing the suitability of a site should be the successful demonstration of F1D flying in the site for local or national competitions. The individuality of sites makes a list of requirements meaningless but the factors to be considered include:

Size and height of the hall - there must be an adequate area over which the height is close to the maximum, to allow enough space for models to use the height for maximum climb (this is reflected in the ceiling category definition F1D.12);

Adequate and clear flat floor space, especially under the highest part of the ceiling;

A minimum of obstructions in the airspace (hanging ropes, cables, lights, etc);

Walls and ceilings not made of materials likely to trap models on contact;

Adequate lighting, especially in model preparation areas on the floor and up to the ceiling for model observation and steering;

The hall should be as airtight as possible (closed doors, windows, etc) to minimise draughts;

The organiser must have complete control of access to the building (for example, to keep visitors under control but allow competitors unhindered access to the site);

Minimum influence of external weather on the inside air conditions (rainproof, minimum interior heating from the sun, etc).

Aside from the hall itself a Championship requires:

- a) ease of access for competitors arriving by road or by public transport and via international ports and airports;
- b) availability of adequate and reasonably priced accommodation for all competitors, team managers, officials, and at least some supporters and helpers;
- c) time taken to travel between the official accommodation and the flying site (desirably this should be less than 30 minutes);
- d) availability of local hotels for additional supporters.

When offering a site in a Championships proposal to the CIAM, the National Aero Club must give a detailed description of all the aspects discussed above, including especially a detailed plan and profile of the site with measurements. The accommodation facilities must be described and the entry fee stated, split into an obligatory part and an optional part for food and accommodation (C.15.5). These fees should be justified to CIAM by including an estimated income and

expenditure budget for the Championship. CIAM should be given accurate scale drawings of the hall and details of transport connections to the venue, with regard to competitors travelling with large boxes.

For a site not previously used for Championships it should be arranged for a CIAM representative from another country to visit the flying site while it is being used for a national competition or practice flying. This official may be a member of the CIAM Bureau, or the Chairman or a member of the CIAM Free Flight Subcommittee, a CIAM Delegate, or a member of the FAI Jury at a recent Indoor Championships. In the case of CIAM Delegates or CIAM Bureau members the chosen representative should have recent experience of indoor flying. The CIAM representative should discuss the site with internationally known and respected modellers who fly F1D and regularly use the proposed site.

Well in advance of the event, information should be sent to National Aero Clubs and members of the FAI Jury, including a description of the site and any special features. Maps should be given showing the location of the flying site, the accommodation and the participants' registration point relative to roads and local towns.

### **A3.3. Timetable**

The time of year for the contest should be chosen to minimise the effect of external weather on the indoor flying conditions in the hall.

It is required (C.16.1.d) that at least one practice day be provided before the contest. It is often arranged that the opening ceremony takes place during the practice day: if this is done then the interruption to the practice flying should be as short as possible, whether the ceremony is held in the hall or elsewhere.

There are no defined round times or other constraints on the timetable for F1D competitions. The only requirement is that each competitor is allowed 6 flights. The scheduling of these flights depends on local circumstances and also on the number of competitors in the event. If the number of competitors is so large that there are likely to be enforced delays on launching (to prevent there being too many models in the air at once) then the timetable must allow more time for flights.

The most common arrangement for World Championships is to have 2 flights per day spread over 3 competition days; 3 flights per day over 2 days has been used for some Championships at large sites and for Continental Championships with smaller numbers of entries. It is convenient but not essential if each competition day is subdivided into rounds; this helps to spread the flights through the day and allows a better appreciation of the current results as the competition develops. Each round should be long enough to allow time for all competitors to fly and also to take reflights in the event of collisions, but not excessively long otherwise conditions may vary too much during the round. Time must be allowed for practice flying during each competition day, for example at the beginning and end of the day and possibly also in a break between rounds.

The published timetable should include the starting and finishing times of the rounds and practice times. The finishing time of a day or a round must refer to the last launch time: remember that a flight launched just before this finishing time may continue for a considerable time after the 'finishing time', for example 45 minutes. No other activity should be scheduled during this period after the last launch time. The timetable should also include the time and place of:

- a) a meeting of the organisers with the team managers after arrival and also in the evening before each contest flying day;
- b) briefing meetings for the timekeepers;
- c) an opening ceremony;
- d) an awards presentation ceremony for the award of FAI Trophies and Diploma to the winners.

It is important that at least some members of the FAI Jury are invited to and are present at each of these functions, that is: each team managers meeting, the timekeeper briefing, the opening and the awards ceremonies.

Copies of the timetable should be distributed at least 2 months in advance to those National Aero Clubs that have indicated their intention to participate, with points of detail supplied if necessary in hand-outs upon arrival at the event.

### A3.4. Flying Site Organisation

This section of the guide concerns the running of the flying site on contest days. While split into a number of headings here, it is essential that all aspects of the organisation are closely integrated.

#### A3.4.1. Officials

Separate spheres of duty require a contest director, a chief timekeeper and a site organiser:

The *contest director* takes overall control and is responsible for contact between the team managers, chief timekeeper, the model processing staff, other officials and the FAI Jury. He should arrange for contacting the Jury immediately in the event of a protest being received under rule C.20.

The *chief timekeeper* is in charge of all aspects of timekeeping and recording and displaying scores, discussed in section 5 of this guide.

The *site organiser* takes care of administrative and logistic matters not immediately impinging on the contest flying. He has specific responsibility to control access to the hall and to prevent actions likely to damage models or disturb the air in the hall, for example ensuring that doors and windows are closed and that only people directly involved with the flying walk around the floor or near models. All obstructions should be kept to a minimum in any area where competitors may need to go to steer models. The site organiser shall also enforce a ban on the use of flash lights or high intensity lights by photographers during practice or the competition (these can act to blind competitors during delicate operations on their models). The site organiser should also have staff available to retrieve models which become caught on the structure of the building and which cannot be retrieved safely by competitors.

In addition, interpreters must be available at all stages of the Championships for languages sufficient to allow communication between the main officials, team managers and the FAI Jury. An essential minimum is to ensure that these three categories of people are able to communicate via the official languages specified for the Championships. The smooth running of the event is aided by also supplying interpreters for teams which are unable to converse in any of the official languages.

#### A3.4.2. Equipment

The basic essentials for processing F1D models are devices to confirm that the weight of the model exceeds the specified minimum and that the weight of the motor does not exceed the specified maximum and dimensional checks to confirm that the wingspan, wing chord and tail span are within the specified maxima. These items of processing equipment will usually need to be produced especially for the purpose. They may be well engineered mechanical devices (such as two weighted strings at the correct spacing for the wingspan check) or may employ electronic equipment according to local availability. Whatever form of equipment is used it must be reliable and accurate. It must be set up on firm bases, shielded from draughts, and set up in a position which does not obstruct flying but which is accessible for models to be processed before going on to the floor to fly. Only the processing official, the competitor and their helpers should be allowed near the processing equipment. A means of marking models should be available, such as coloured soft pens.

An official clock, reading to the nearest second, should be used to time the rounds or start and finish times. It should be accurate throughout the day and should not be adjusted after the start of the contest. The clock should be available for reference by competitors and defines the timetable as published, unless changes have been announced. The start and finish of rounds should be marked by audible signals or announcements. A public address system may be helpful for communications from the organisers, calling for the Jury, making additional announcements on round times, etc, but its use should be kept to a minimum. No music may be played during the competition. Communications for competitors must be made in all official languages.

Equipment is necessary for processing the flight times recorded by the timekeepers and a scoreboard or suitable computer display is essential for showing latest results. The equipment required by timekeepers is discussed in section 5. All equipment shall be checked by the FAI Jury before the beginning of the competition.

#### A3.4.3 Facilities

Refreshment, toilet, and first aid are required in the immediate vicinity of the hall (but not obstructing the flying area). Arrangements should be made to supply food during the day to competitors (and those helpers who have paid for official food) and the arrangements for this

must be announced in advance. If lunch is served away from the hall during the competition it must be only a short distance away; if it is served at the flying site it must not be in a position to interfere with flying when this is in progress. A transport service should be provided to take competitors between the official accommodation and the flying site, with the bulk of this required well before the scheduled start of contest flying and after the close of flying, but with a less intensive service required during the day. The organisers must indicate suitable car parking places for competitors and also positions for delivery of model boxes to the hall entrance.

### **A3.5. Model Checking**

There are three phases to this operation with the following requirements:

- 1) The first phase, before the competition starts, involves checking that each competitor holds a valid FAI Sporting Licence (C.6). If the Sporting Licences are impounded during the event, plans should be drawn up for returning them at the end of the competition.
- 2) The competitors must be allowed access to the official processing equipment to measure model characteristics (C.16.1.c).
- 3) The third phase of checking requires that during the competition the organiser should measure the relevant characteristics of each model when it is used for an official flight. For F1D this means checking model weight and wingspan before the flight and the weight of the rubber motor before or after the flight (F1.3.2).

The equipment required for processing (see also Section 3 Equipment) thus includes:

- A means of marking processed models;
- A means of accurately checking the weight of models;
- A means of accurately checking the weight of rubber motors;
- Means of accurately confirming that wingspan, wing chord and tailspan meet requirements.

### **A3.6. Timekeeping**

This is a most important aspect of any free flight competition. The people chosen for duty as timekeepers should have good eyesight and have some experience of the task, preferably being active aeromodellers. They should be familiar with the rules of the event; to reinforce this a detailed briefing meeting should be held before the event and the timekeepers should be issued with copies of the rules and a briefing sheet, such as presented in Appendix B.

Two timekeepers are required for each national team at Championships. There are a number of possibilities for allocation of timekeepers: timekeepers may be allocated to teams at random for each round of for each day, or the same timekeepers may be assigned to a national team for the entire competition. The former method has the merit of mixing the expertise of timekeepers between the teams without forming any close association or support for "their" team, whereas the latter has the merit of enhancing efficiency through familiarity of teams and timekeepers.

The same pair of timekeepers may work together for the entire competition or the pairing may be changed for each day. A few spare timekeepers should be available to cover for any timekeeper who must unavoidably leave his position during the day (but substitution should not take place during a flight unless in exceptional circumstances). Alternatively, all timekeepers may be kept in a central pool and called forward as required for each competitor as he has been processed ready for flight. It is most important that all timekeepers should be ready for duty at the start of each round.

Equipment required for each timekeeper includes: at least one stopwatch of at least the accuracy specified (F1D.9), score cards on a board with pens, briefing sheets, a means of identification to competitors and team managers, and a chair or mattress or couch from which long flights may be observed comfortably. At least one of the timekeepers in each pair must have an additional watch suitable for accumulative timing of the time for which the propeller is stopped during steering.

The timekeepers should write down the results in exactly the form in which it is recorded on the stopwatch (for example, as minutes and seconds) to avoid conversion errors. The score cards should include a second copy facility so that a copy of the recorded result for each flight may immediately be given to the team manager. After the results have been recorded the score cards should be taken to a central scoring desk. Here any appropriate conversions should be made (for example, into seconds) and the score recorded on a master sheet. If a computer is being used for processing the results, the scores should be entered into it after recording them on the master sheet and programs should obviously be carefully checked and regular copies of data made to

safeguard the smooth and accurate preparation of the results. A public scoreboard or computer displays should be updated to show latest individual and team scores and positions as soon as possible (C.16.1.f).

Written copies of the results should be prepared at the close of the event and handed out to team managers, competitors, supporters and press representatives. Results must also be sent to the FAI and participating National Aero Clubs within one month (C.13.6).

## ANNEX 3, APPENDIX A

### A GUIDE FOR THE ORGANISERS OF FAI INDOOR FREE FLIGHT OPEN INTERNATIONALS

The organiser of Open Internationals has the same responsibility to run an event according to FAI regulations as does the organiser of a Championship. There is a greater need to ensure fair arrangements for all competitors since they are not assisted by the formal representation through the team manager that they have at a Championship.

Many of the points given in the Guide for Championships organisers are still appropriate to Open Internationals and in the following Guide emphasis is placed on the differences. In addition to F1D, Open Internationals may also include competitions for the F1L, F1M, F1N and F1R.

#### A3A.1. Site

A good flying site is as important for an Open event as it is for Championships. The major point of difference is that there is no requirement to supply official accommodation and catering. This places increased emphasis on the need for hotels and other accommodation near to the flying site.

The inclusion of an event on the FAI Contest Calendar requires submission of a completed CIAM application form with the appropriate fee. General information together with the entry forms should be sent to National Aero Clubs and to any individual requesting them. Detailed maps showing the location of the flying site and the registration office should be sent to all registered competitors.

#### A3A.2. Timetable

It is likely that there will be little opportunity to make the schedule for an F1D Open International significantly shorter than that for a Championship. While there is a relaxation of the team flying routine at a Championship it is likely that the major constraint on round length will be the number of models which may be allowed in the air at any one time without undue risk of collision. Depending on the numbers and the site, a schedule of three rounds per day for two days is probably the shortest possible.

The smaller model classes, F1L and F1M, are characterised by quicker flight preparation time, shorter flight times, and the possibility of allowing more models in the air at the same time. These factors combine to allow a shorter timetable, but there may not be adequate time to complete a whole competition within one day. These models should not be scheduled to fly concurrently with F1D models.

On other aspects of the timetable, note that competitors will still require practice time, but it is likely that meetings and ceremonies will be simpler and shorter than those for Championships. Details of the complete timetable should be sent in advance to all registered competitors, with any necessary points of clarification supplied in hand-outs upon arrival at the event.

#### A3A.3. Flying Site Organisation

The comments under this heading in the Championships Guide are equally applicable to Open Internationals, with the addition of some different or extra equipment for processing F1L and F1M models.

#### A3A.4. Model Checking

All of the comments on model checking for Championships remain valid for Open Internationals. It is necessary to allow for the differences in characteristics of the additional classes and for the extra quantities to be verified. Class F1L requires checks to be made on wingspan, wing chord, ratio of tail area to wing area, and the minimum weight; furthermore, the form of structure and design must be verified to meet the specifications. F1M models require checks on the wingspan, model weight and rubber motor weight.

#### A3A.5. Timekeeping

This is just as important as in a Championship and it may be more difficult to obtain enough skilled people to act as timekeepers. The timekeepers should be experienced aeromodellers with good eyesight and be familiar with the rules of the event. They should be issued with copies of the relevant rules and a briefing sheet in the style of Appendix B.

The requirements for processing scores and for timekeeping equipment are the same for Open Internationals as described previously for Championships.



## **ANNEX 3, APPENDIX B**

### **INDOOR FREE FLIGHT TIMEKEEPER BRIEFING INSTRUCTIONS**

The duty of timekeepers is to fairly observe and record the times of flights by the competitors. In the course of this they must follow the rules of the FAI Sporting Code and also must ensure that the flights are made in accordance with the Sporting Code. To achieve true sporting results, it is essential that the timekeepers act so as to give the competitors the greatest possible opportunity for making their flights.

On a day prior to the competition, the organisers should hold a meeting to brief the timekeepers, to explain the rules and describe the logistics and operating procedures to be followed during the event. A chart of timekeepers allocated to each nation should be distributed, unless timekeepers are to be called when required from a pool.

There follow some detailed points on the task of timekeeping, specifically aimed at timing in Championships, but also applicable to Open Internationals.

#### **A3B.1. Start of Competition**

The timekeepers must be ready for duty with their specified team at least 10 minutes before the start of the first round. They should have collected all the necessary equipment - stopwatches, score cards, pens - and have arranged their chairs (if used) ready for observing the flights.

#### **A3B.2. Preparing to time a flight**

When a competitor is preparing to make a flight, the timekeepers must check his name and number on their score cards. Processing of the model must be observed, from a distance so as not to disturb the flyer or his model but watching adequately to confirm that the model is not modified or changed after processing and before launch. Timekeepers must study the shape and characteristics of the model to aid recognition. They should zero their stopwatches.

#### **A3B.3. Timing a flight**

The timekeepers must check that the flight is launched after the start and before the finish signal for the relevant round.

The model should be watched carefully and continuously during the flight. Special attention should be given to the period just after launch when the flight may be counted as a delayed flight. The model must be watched to check for a collision with another model in flight or for fouling by another competitor while he is steering; if this happens the timekeepers must immediately confirm to the competitor (or his team manager) that the collision has been seen. The timekeepers should continue to time the flight to its termination, unless the competitor indicates that he does not want it to be counted. The competitor may make the choice to retain the flight or to recommence at any time until 2 minutes after the flight has terminated. If he chooses to recommence the flight, then the new flight must be made through the full procedure of processing the model and preparing for flight (which may be made with a different model).

Another major task of the timekeepers during a flight is to observe any steering of the model. This must be undertaken in accordance to the rules, which should be studied and briefed carefully. Particular aspects which need to be checked include:

- a) steering should only be undertaken to avoid a clear danger of collision with the building or other models,
- b) the competitor must steer the model himself,
- c) the altitude of the model must not be changed significantly (neither up nor down),
- d) care must be taken to avoid fouling other models in flight.

As well as observing the correct conduct of the steering the timekeepers must watch the propeller and time the periods when it is stopped. This should be accumulated on an additional watch while the flight time watches are left running undisturbed as described in the Sporting Code.

At all times the timekeepers are free to walk around the hall to give themselves the best position for observing the model and any steering. They must be careful not to disturb other models.

#### **A3B.4. Recording a flight**

The timekeepers should record on the score sheet if the competitor had a delayed flight or if he had a collision which he chose to recommence. Otherwise, at the end of a regular flight they should record the times shown on the watches. To avoid possible misunderstanding or error, it is

best to write down the times directly as recorded on each of the watches. Then the relevant calculations may be made and also written down: subtracting steering propeller-stopped time and taking the mean of the two recorded times (to the nearest whole second). The completed score cards should be taken by the timekeepers to the central scoreboard and recording position.

#### **A3B.5. Disputes**

A dispute that cannot be resolved between the timekeepers and the team manager must be referred to the contest director. The timekeepers should not leave their duty if they are in the middle of timing a flight. If a dispute is not resolved during a round and the competitor could be entitled to a reflight if his protest is upheld, then the timekeepers should time a reflight if so, requested by the competitor or his team manager. The time should be recorded separately in case it is required when the dispute has been settled.

## ANNEX 4 FREE FLIGHT RANKING

The purpose of the Free Flight Ranking is to demonstrate the relative merit of performances by competitors on a continued basis.

### A4.1. Classes

F1A, F1B, F1C, F1E.

### A4.2. Competitions

All Free Flight World and Continental Championships and all Free Flight World Cup events are included.

### A4.3. Updating the list

The effective date for updating ranking list will be every 2 months starting from March 1 in each year and continuing until the last competition of the year has been completed. The list will be published when the results of all competitions up to that date have been received.

### A4.4. Points from events

For every event the competitors' scores will consist of two components:

- a) A results component. This consists of points awarded on the same basis as World Cup points for competitors finishing in the top half or top half of the results list. Bonus points are given in accordance with the current World Cup bonus allocation.
- b) An event ranking position component. This measures how well the competitor has performed in an event compared to the result which would be expected from his current position in the ranking.

To calculate this all the competitors in the competition are placed in the order in which they appear in the current ranking. Any competitors not previously on the ranking list will be assumed to be equally placed at the bottom of the ranking list. Each competitor is allocated points according to the difference between their actual position in the competition and the position calculated according to the ranking list. Ten points are awarded for every 3 places different, positive if placed better than ranking position, negative if below ranking position.

### A4.5. Expiry of scores

A time limit is applied to competitions at the time of updating the ranking list. The points obtained for events held within the last 12 months will be counted in full. Any points obtained from events held during the period from 12 months to 24 months will be reduced by a factor varying linearly according to the time in that period, reaching a factor of zero at 24 months. Thus, competitions do not count for ranking after two years.

### A4.6. Ranking score

A ranking score for a competitor is calculated according to the following scheme:

- a) The points total for each event is obtained by adding together the points scored under (4a) and (4b) and factoring down the result if the event was more than one year before the ranking date as defined in (5) and rounding down to whole points.
- b) A competitor may count his best 6 positive points totals. This may include any eligible events, without limitation on organising or venue countries.
- c) All negative results are counted.
- d) The ranking score is the total of the eligible totals from (b) and (c). A negative ranking score will be treated as zero.

### A4.7. Starting ranking

The defined scheme will be followed for competitions over a 2-year period in advance of the start of official ranking. At the start of that 2-year period the ranking list is defined by the final points and position in the World Cup of the previous year. These initial World Cup points are subject to the expiry of scores factor as defined in (5) so that they cease to contribute to scores by the start of the official ranking.

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