



**BRITISH MODEL FLYING ASSOCIATION
CONTEST RULES
SECTION 7
RADIO CONTROLLED SILENT FLIGHT
GLIDERS & ELECTRO-FLIGHT**

**To be read in conjunction with the General Rules, Sections 1 and 2,
which are available free of charge from the BMFA.**

Effective January 2022

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CONTEST RULES - SECTION 7

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Note: FAI class rules for F3F, F3K, F5B, F3L & F5J are in the FAI Sporting Code which can be downloaded from <https://www.fai.org/page/ciam-code>. These rule books are also available direct from BMFA Head Office.

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NOTES

Gender

Words of masculine gender should be taken as including all genders.

Changes to the Rule Book

Other than changes for consequential sub-paragraph re-numbering, minor typographical, grammatical & syntactical reasons, changes to the rules are denoted by a side-bar as shown on the right.

Synopsis of Changes appears overleaf

Synopsis of Changes

Changes from January 2021 edition:

- 7.2.5 Nose radius clarification
- 7.6 F3L provisional rules added
- 7.21.1 F5J UK rule variations
- 7.23 Addition of GPS triangle rules.
- 7.24 Addition of FX-RES rules

7.0 RADIO CONTROLLED GLIDERS

7.1 GENERAL RULES

7.1.1 Definitions of a Radio Controlled Glider

Aeromodel which is not provided with a propulsion device and in which lift is generated by aerodynamic forces acting on surfaces remaining fixed except for control purposes (ie not rotating or ornithopter type surfaces).

7.1.2 Definitions of an Electric Powered Glider

Aeromodel, as in 7.1.1, but when propulsion is affected by fixed or foldable propeller(s) driven by an electric motor which may or may not be regulated during flight.

7.1.3 Radio Frequencies

Radio frequencies on which R/C Gliders are flown should be EVEN NUMBERS in the 35 MHz BAND ONLY. Competitors should realise the need to be able to change frequencies in the case of a fly-off in certain competitions.

2.4 GHz radio equipment may also be used.

27 MHz band Radios are not recommended for other than MINI GLIDER contest work.

A full listing of radio frequencies available for model control is published in the BMFA Members Handbook, section 1.2.6.

7.1.4 Protests and Appeals

- (a) It is the right of a competitor to protest against any decision by a Contest Director (CD). Any such protest, however, must be made officially to the CD, and must be made on the day. The protests and appeals procedure to be followed at the contest is also set out in the General Regulations and Rules, Section 2, and in the event of discrepancies they shall take precedence.
- (b) If not satisfied with the CD's decision the competitor must, on the day, hand the CD the protest in writing, together with a fee of double the standard entry fee. The CD will then immediately empanel three appropriate persons to deal with the protest.
- (c) The Panel's decision is final, subject to the right of the competitor who submitted the protest to appeal to the BMFA Council.
- (d) Appeals to Council about a decision made at a contest must be made as follows:
 - (i) Notification that an appeal is pending must be sent to the BMFA Competition Secretary to arrive not later than two weeks from the date of the contest.
 - (ii) The appeal itself, together with any supporting evidence, must be sent to the BMFA Competition Secretary to arrive not later than two months from the date of the contest.
- (e) Protests made to Council after the contest may only be made direct to the BMFA Competition Secretary who, after considering the details of the protest, may bring such protests to the attention of BMFA Technical Council. Notification of an "after the contest" protest must be made to the Competition Secretary within 7 days of the contest and the protest and evidence submitted not later than two months from the date of the contest.
- (f) Protests or appeals arising from a decision made by a Technical Committee on contest related matters may only be made directly to the Competition Secretary and must be accompanied by a £50 fee. The Competition Secretary will then convene a Panel comprising three Technical Committee Chairmen and not including the Chairman of the Technical Committee concerned. This Panel, plus

the Competition Secretary, will study the appeal and examine the reasons for the Technical Committee's decision.

- (g) If the protest or appeal is not upheld, then the appellant(s) must be informed of the reasons for the decision. This procedure does not preclude an appellant(s) taking a failed protest or appeal to the BMFA Full Council.
- (h) If the written protest or appeal is upheld, the protest fee will be returned, however if the protest or appeal is unsuccessful the fee will be allocated to the team travel fund of the relevant discipline.

7.2 GENERAL RULES FOR SILENT FLIGHT CONTESTS

7.2.1 Object

To provide standards for the competitive flying of R/C Silent Flight models where these are not otherwise specified.

7.2.2 Safety

It is the responsibility of the Contest Director (CD) to ensure the safety of contestants, assistants and any members of the public who may be present at a competition.

It is the responsibility of all competitors to report to the CD any incident which causes injury, however minor, to any person. Competitors also have a responsibility to report situations which could potentially endanger the CD.

The CD must make a written report of the incident(s) to the Safety Representative of the Silent Flight Technical Committee stating what happened, the cause of the incident and giving an opinion of how a repetition could be avoided in future

7.2.3 Flying Site

Competitions, other than slope competitions, must be held on sites having reasonably level terrain which will minimise the possibility of slope and wave soaring.

7.2.4 Number of Models

- (a) The competitor may use not more than two models or the combined parts thereof in any one competition unless otherwise allowed in the class rules.
- (b) The competitor shall not allow any other competitor to use these models or the parts thereof during the same competition.
- (c) The competitor shall display on the wing of any model flown in a permanent manner in characters not less than 25 mm high his name or BMFA number.

7.2.5 Characteristics of Model Aircraft

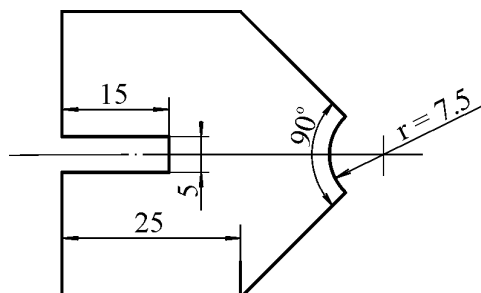
7.2.5 Characteristics of Model Aircraft

- | | | |
|-----|-------------------------|--|
| (a) | Maximum Surface Area | 150 dm ² (2325 in ²) |
| | Maximum Flying Weight | 5 kg (11.023 lbs)* |
| | Maximum Surface Loading | 75 g/dm ² (24.51 oz / ft ²) |
| | Minimum Surface Loading | 12 g/dm ² (3.95 oz / ft ²) |
- (b) Any device for the transmission of information from the model to the pilot by means of radio equipment, other than receiver battery state or signal strength, is prohibited.
 - (c) Nose of model shall have a radius of not less than 7.5 mm.
 - (d) All ballast must be carried within the airframe.

* Unless a different maximum is specified below for a particular class.

BE SURE TO CHECK INDIVIDUAL COMPETITIONS FOR FURTHER RESTRICTIONS WHICH MAY APPLY

**FAI TEMPLATE FOR
NOSE RADIUS, TOWHOOK
AND MARKING**



7.2.6 Radio

- (a) Radios in the 35 MHz band shall be able to operate simultaneously with other transmitters, preferably at 10 kHz but at least 20 kHz from the control transmitter.
- (b) Radios in the 27 MHz band are not recommended. However where they are used they shall be able to operate simultaneously with other transmitters, preferably 20 kHz but at least 50 kHz from the control transmitter.

7.2.7 Control of Transmitters not in the 2.4 GHz band

- (a) The organiser cannot begin the competition flights until all competitors have handed over all transmitters to the organisers. Failure to hand in a transmitter before the official starting time of the contest will result in disqualification.
- (b) Any test transmission during the competition without the permission of the organisers is forbidden and entails disqualification.
- (c) The competitor must hand over his transmitter to the designated official immediately after finishing his flight.

7.2.8 Competitors and Helpers

- (a) The competitor (pilot) must operate his/her own radio equipment personally.
- (b) Each competitor is allowed a total of three helpers.

7.2.9 Competition Flights

See individual competition rules for any specific rules on competition flights, otherwise the following applies.

- (a) The competitor will be allowed at least TWO (preferably more) official flights.
- (b) The competitor will be allowed TWO attempts at each official flight.
- (c) There is an official attempt at a flight when the model has left the hands of the competitor or his/her helper under the pull of the launching apparatus.
- (d) If, for any reason, the official flight is timed at less than 60 seconds in duration, the competitor will be allowed a second attempt which must be made immediately and within the allocated time slot.
- (e) A complete slot must be re-flown if any flight(s) was not judged by fault of the organisers or time-keepers.
- (f) All flights must be timed by at least TWO stopwatches, one of which must have a digital display. In the event of both watches failing the flight will count as zero.

7.2.10 Cancellation and Disqualification

- (a) The flight is cancelled and recorded as a zero score if the competitor used a model not conforming to any items of rule 7.2.5. In the event of intentional or flagrant violation of the rules, in the judgement of the Contest Director, the competitor may be disqualified.
- (b) The flight is cancelled and recorded as a zero score if the model loses any part in flight.
- (c) The loss of any part of the model during landing (touchdown) will not be recorded.
- (d) The flight is cancelled and recorded as a zero score if the model is piloted by anyone other than the competitor.
- (e) The flight is cancelled and recorded as a zero score if some part of the model does not land within 75 metres of the centre of the designated landing circle/area (this does not apply to class F3B).

7.3 100S THERMAL SOARING

7.3.1 Objective

To provide a thermal soaring competition for standardised R/C gliders.

7.3.2 Model Characteristics

- (a) Maximum projected wingspan will be 100 inches.
- (b) Directional control shall be by the use of rudder and elevator only.
- (c) The use of airbrakes or spoilers, excluding any such device used additionally for directional control or camber changing devices giving altered lift generation, shall be permitted.
- (d) Models using a flying wing or canard configuration are exempt from the wing control surface restrictions in rule 7.5.2.(c) above.

7.3.3 Certification

At the Contest Director's discretion, or upon the demand of two competitors, any model may be checked for compliance with the above rules.

7.3.4 Use of Models

- (a) A competitor may use a maximum of three models.
- (b) Component parts of the two models may be interchanged but not with those of other competitors.

7.3.5 Ownership of Models

- (a) Any individual model may only be flown by one entrant in any particular competition.
- (b) The entrant shall be the genuine owner of the model and, as proof of ownership, the entrant's name or BMFA or BARCS number shall be displayed on the wing of the model in a permanent and prominent manner.

7.3.6 Competition Flights

- (a) The competitor has the right to TWO attempts at each official flight, providing that he declares his first attempt to his own and one adjacent timekeeper, within 30 seconds of release of the model from the towline. He may land at his own discretion but must make his second attempt within the allocated slot time.
- (b) There is an official attempt at flight when the model has left the hands of the competitor or his/her helper under the pull of the launching apparatus.
- (c) All flights to be timed by two stop-watches, one of which must be digital, and in the event of both stop-watches malfunctioning the flight will count as zero.
- (d) Re-flights.
 - (i) At the discretion of the CD, a slot may be re-flown in its entirety, if
 - (1) In the CD's opinion, an outside event has occurred which has interfered with the fair running of the slot.
 - (2) In the CD's opinion, there has been a malfunction of some part of the contest equipment, necessitating a re-flight.

In the event of either of these situations, the first flying slot is to be considered null and void with all slot scores cancelled, and all competitors in the slot must re-fly, starting from scratch, when called upon by the CD. Should any pilot not be prepared to re-fly, his or her score for that entry in that round will be zero.

cont/...

- (ii) An individual pilot may request a re-flight if, in his opinion, his flight was hindered or aborted by an unexpected event, not within his control. At the discretion of the CD the pilot may be allowed to re-fly again in another slot, providing there is a vacant spot in the matrix, where in the opinion of the CD, the pilot has valid reasons for requesting a re-flight. In this event the pilot will forfeit his first score and the result of his repetition flight will be his official score.

7.3.7 Cancellation of a Flight and/or Disqualification

- (a) The flight is cancelled and recorded as a zero score if the competitor used a model not conforming to any items of the Model Characteristics of the class entered (7.5.2) In the event of intentional or flagrant violation of the rules, in the judgement of the Contest Director, the competitor may be disqualified.
- (b) The flight is cancelled and recorded as a zero score if the model loses any part in flight, except where this occurs as the result of a mid-air collision with another model or towline. The loss of any part of the model during the landing (touchdown) will not be recorded.
- (c) The flight is cancelled and recorded as a zero score;
 - (i) If after landing some part of the model does not come to rest within 75 metres from the marked centre of the designated landing area.
 - (ii) If the model comes into contact with another person, unless that person has entered the designated landing area before all models have landed and that person is thus in violation of rule 7.5.10 (b). The Contest Director has the discretion to disqualify a flight if the flyer flies over or through the area in which the pilots are standing for launching and landing, at a height which is deemed to be dangerous.
- (d) The flight is cancelled and recorded as a zero score if the model is piloted by anyone other than the competitor.
- (e) The Contest Director has the discretion to warn or disqualify any pilot who deliberately executes unnecessarily dangerous manoeuvres.
- (f) If the layout of the field permits the suggested rectangular landing area downwind of the winch line, then it is recommended that a 'Safety Corridor' be set out of about 6 metres width with the upwind edge of the landing rectangle being the downwind edge of the safety corridor. This makes the safety corridor the 'Pilot's Box'. This corridor should extend for the full length of the flight line running to at least 10metres beyond the end of any designated landing and launching positions or any organiser required obstruction in line with this corridor, such as a control tent or table. All launches and re-launches should take place from the safety corridor at it upwind side. In the event that model or any part thereof comes to rest, after landing, in the safety corridor a penalty of 100 points shall apply. In the event that the model hits any person in the safety corridor a penalty of 1000 points shall apply. This 1000 point penalty applies to a model hitting someone who is in the safety corridor, in other cases, where a model hits a person then clause 7.5.7 (c) above applies.

7.3.8 Organisation of the Flying Slots

- a) The competition shall consist of a minimum of four rounds and the flying order for the rounds shall be arranged in accordance with the radio frequencies in use to permit as many simultaneous flights as possible.
- (b) The flying order must be scheduled in Rounds sub-divided into time slots.

cont/...

- (c) The flying order shall be determined by a Matrix system (see appendices) such that, as far as possible, no competitor shall fly against another competitor more than once, except in the final fly-off.
- (d) Entry on the day of the contest will only be accepted if a vacant position is available in the matrix.
- (e) A competition number, derived from the matrix, must be allocated to each competitor and must be retained throughout the rounds.
- (f) Competitors are entitled to a minimum of 5 minutes preparation time which is counted from the moment he/she is called to take position at the designated launching area.
- (g) The organisers must indicate very positively the start of slot time both audibly and, if possible, visually (see appendix (1) for details).
- (h) The slot time shall be of exactly 8 (eight) minutes duration.
- (i) Audible and, if possible, visual signals must be given when 2 (two) minutes of the slot time have elapsed and also when 2 (two) minutes of the slot time are remaining
- (j) The end of the slot time must be very positively indicated both audibly and, if possible, visually, as for the start.
- (k) Any model airborne at the completion of slot time must land immediately.
- (l) During flights, pilots and their helpers shall proceed to and remain within a designated Pilot's Box outside the edge of the landing area.

7.3.9

Launching

- (a) The launch of the model will be by:
 - (i) Hand held towline, with or without a pulley, only one person to tow.
 - (ii) Any anchoring of pulleys to be done by means of a ground stake.
 - (iii) Winch devices (mechanically or hand powered).

Power winches may be used.
Power winches should be laid out such that they allow hand towers to launch into wind at all times, whilst maintaining sufficient spacing between launch points.
- (b) The line length not to exceed 150 m when under a tension of 2 kg.
- (c) The towline must be equipped with a pennant or parachute having a minimum area of 5 dm².
- (d) Towlines for each flyer must only be run out during the competitor's five minutes preparation period and must be retrieved by the end of the slot.
- (e) The towers shall remain in any area designated by the Contest Director.
- (f) The Contest Director shall designate take-off points that are arranged in a straight line. The model must be launched from the designated take-off point.
- (g) Any model launched prior to the start of the slot time must be landed and re-launched within the slot time. Failure to comply will result in cancellation of the competitors score for that round.
- (h) The release of the towline from the towers end is not allowed.
- (i) Deliberate weaving of a model on the line is not permitted, and will be declared an attempt by the CD. A relaunch shall be allowed. CD's should regard repetition as unsafe flying, and may disqualify the competitor.

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7.3.10 Landing

- (a) The landing zone shall consist of a cross wind rectangle where, if the field size permits, the upwind end of the zone shall be a line positioned 7 metres downwind of the launch line (on which the power winches are located) and the downwind end of the zone shall be another 50 metres downwind of the zone upwind line. That is the landing zone is 50 metres deep. The zone shall extend out to the edge of the flying field in both directions.

If the field size is restricted the “downwind” edge of the landing zone shall be located upwind of the launch line with the zone’s “upwind” edge being 50 metres further upwind of that.

Alternatively the CD may, if circumstances permit, layout a circle which shall be a 75 metre diameter circle or a similar sizes area designated by the CD and placed to one side of the winches.

The centre of the landing area shall be marked in a visible way for instance by use of a spot or a cone.

- (b) Competitors may only retrieve their models on completion of the landing providing they do not impede other competitors and models.

7.3.11 Scoring

- (a) The flight will be timed from the moment of release of the launching device to:
- (i) The competition of the slot time or,
 - (ii) The moment the model first touches the ground or,
 - (iii) The moment the model first touches any object in contact with the ground.
- (b) The flight score will be composed of ONE point for each FULL second of flight time.
- (c) A penalty of 80 (eighty) points will be deducted from the flight score for over-flying the end of the slot time for up to a maximum of ONE minute (60 seconds).
- (d) A zero score will be recorded for over-flying the end of the one minute penalty time.
- (e) An extra 50 points will be added to the flight time core if, after landing, any part of the model (provided that part has not become detached from the model) comes to rest within the designated landing area, provided the model lands before the completion of the slot time.

7.3.12 Slot Scoring

- (a) The competitor who achieves the highest aggregate of points, ie flight points less penalty points, will be awarded a corrected score of one thousand points for that slot.
- (b) The remaining competitors in that slot will be awarded a percentage of the slot winners total score calculated from their own total score, ie the competitor’s own score times 1,000 divided by the highest points total in the slot.

$$\text{Competitor's Slot Score} = \frac{\text{Competitor's Points} \times 1000}{\text{Slot Winner's Points}}$$

The slot score is rounded down to the nearest whole number

cont/...

7.3.13

Final Classification

- (a) At the completion of ALL rounds the competitors with the highest totals of percentage scores must perform in a Fly-off (the CD to decide the number of competitors in the fly-off), to produce the final competition placings by one of the following methods:
 - (i) Two further slots whereby all finalists compete simultaneously against each other twice.
 - (ii) Three further slots whereby all finalists will compete against each other at least once.
- (b) In the event of a fixed frequency clash in qualifying for the fly-off, the competitor with the lowest total score unable to change frequency must drop out in favour of the next competitor.
- (c) The fly-off differs from the initial rounds in no other way other than the slot time being increased to 12 minutes and an audible warning being given at 10 minutes.

7.4 F3F SOARING LEAGUE AND TEAM SELECTION

7.4.1 Purpose

- (a) The aim of the F3F Soaring League is to encourage participation in F3F contests and to provide a league structure, consisting of high quality contests for F3F enthusiasts.
- (b) To provide a sound reliable basis for the selection of pilots to represent the UK at FAI World and European Championships.

7.4.2 League Contests (General)

Reference to the League below should also be understood to mean the BMFA UK F3F Team Selection League.

- (a) F3F Racing Class is governed by rules contained within Volume F3 of the FAI Sporting Code. These additional notes are guidelines considered to be best practice for the organisation of the BMFA F3F Slope Racing League.
- (b) The BMFA F3F League is executed under the remit of the Silent Flight Technical Committee (SFTC), who from time to time may delegate responsibility for the running of the League to an individual League Coordinator, Group of Coordinators, or BMFA Specialist Body as applicable. In the event that a Group is accountable, one person will be delegated to act as liaison to the SFTC and will be known as the BMFA F3F League Coordinator.
- (c) The league will be run annually, typically starting in April and ending in October. The final classification of competitors will be determined at the end of the Season
- (d) Team Selection will be achieved from the results of the final league scores. See section 7.4.7 UK F3F Team Selection.
- (e) An equal number of Competitions to be scheduled in the North and the South of the UK subject to the availability of suitable sites.
- (f) The Southern Boundary of Yorkshire and Lancashire will be the dividing line for determining the classification of a Northern or Southern Competition. All areas to the North of this boundary will be classed as Northern, whilst all areas to the South of this boundary will be classed as Southern.
- (g) National Competitions will be those run on a centralised basis and may include the BMFA F3F Nationals, BARCS F3F Open or any other F3F Open Competitions as designated by the League Coordinator, including UK Eurotour and World Cup competitions.

7.4.3 Contest Entry

- (a) Competitors will pre-enter the contests by 10pm on the Wednesday evening before the Competition. Registration will open approximately 2 weeks prior to this date. The basic details of the contest must be notified on the BMFA website or in the BMFA News at least one month before the contest.
- (b) Pre-entry details must include:
 - (i) Pilots Name
 - (ii) Frequency to be used (A minimum of two legal frequencies in the case of 35MHz.)
 - (iii) BMFA Membership Number or proof of acceptable insurance cover.
- (c) Entry Fee to be paid on the morning of the Competition.
- (d) Entry to BMFA F3F Team Selection League competitions is open to all BMFA members. For non BMFA members refer to General Rule 2.1.6 (d) and (e).
- (e) Entry will be free to Junior competitors

7.4.4 Definition of a League Contest

A Contest qualifies for inclusion in the league Scoring System if it satisfies the following requirements:

- (a) A minimum of four rounds have been completed for League and National Contests (See FAI rule 5.F.13 for discards).
- (b) A Minimum of eight (8) competitors must start the Contest.
- (c) The Contest is flown to the current FAI F3F Rules (local rules/conditions permitting).
- (d) A competitor, regardless of their location, may choose to enter any League Contest in either the Northern or Southern Venue.
- (e) Northern and Southern Competitions should not be scheduled for the same weekend. Exception will only be allowed where the availability of dates or venues prevent such an arrangement.
- (f) A multi-day Competition is one scheduled to last more than one day, and have the clear aim to fly as many rounds as practicable. However to be valid for inclusion in the Final League results, not less than four rounds must be completed over the number of days allocated for the competition
- (g) Radios operating on the 2.4GHz band are allowed but no information from the model to the transmitter is permitted except receiver battery state and signal strength.
- (h) Models must be controlled solely by the competitor from the ground. The use of any on-board devices such as gyroscopes are expressly forbidden. Competitors found using such equipment will be immediately banned from the competition.

7.4.5 League Contest Schedule

- (a) A competitor's final League Score will be determined by, adding up the 'normalised' scores achieved in completed League and National Contests.
- (b) A maximum of four League Contests including the BMFA Nationals and two Eurotour/World Cup competitions to be scheduled at the start of the year, all as described in 7.4.2.
- (c) Up to two Reserve dates should be set for both North and South Competitions. Where two dates are specified, then one date to be at approximately the mid point of the season. In addition, provision for a reserve date for the BMFA F3F Nationals must be included in the calendar.
- (d) All League Contest Schedules to be carried out by the League Co-ordinator(s) as referred to in 7.4.2, to ensure that where possible, all venues and dates are declared before the start of the season. For any contest added later, then at least six weeks notice must be given by the League Co-ordinator stating, the venue and date of the contest for it to be valid for inclusion in the final league results.
- (e) Where the League Schedule has been correctly declared as in section (d) but due to inclement weather forecast at the chosen venue, an alternative venue, in the same area of the UK, may be specified. Notice must be given not later than 48hours before the morning of the competition, that an alternative venue will be used

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- (f) A competitor's final League Results will be determined as follows:

Total Number of League and National Contests Completed

Eight to Nine	Best Five to Count
Six or Seven	Best Four to count
Four or Five	Best Three to count
Three or fewer	All Results to count

The UK Eurotour/World Cup competitions count towards the league scores

7.4.6 League Scoring

- (a) Only Completed Rounds will be scored
(b) League Results

The competitor with the Highest Score in each Contest is assigned 1000 points. The results for all other competitors in that league contest are calculated or 'normalised' using the formula:

$$\text{Competitor's Results} = \frac{\text{Competitor's Score}}{\text{Competition Winner's Score}} \times 1000$$

7.4.7 UK F3F Team Selection

- (a) The Top Three pilots from the BMFA F3F League will be invited to form the UK F3F Senior Team and be recommended to the BMFA SFTC for acceptance. In the event that one of those pilots is unable to accept the invitation, then the pilot with next highest League points will be offered a team position. This process is repeated as necessary in order to fill the places available.
- (b) The Top Three Junior pilots from the BMFA F3F League will be invited to form the UK F3F Junior Team and be recommended to the BMFA SFTC for acceptance. In the event that one of those pilots is unable to accept the invitation, then the pilot with next highest League points will be offered a team position. This process is repeated as necessary in order to fill the places available.
- (c) Pilot selection to form the UK Team will be limited to only those Pilots who's 'normalised' score for the League is within 90% of the League winners score. In the event that insufficient pilots meet the criteria, then no UK Team will be recommended.

7.4.8 Suitability of Flying Sites

A contest should only be scheduled at a slope where model flying and Frequency Control is under the full control of the Hosting Organisation and undertaken with the full permission and knowledge of the Land Owners where applicable. At least one member of the Hosting Organisation must be present to advise on selection of suitable slope, liaison with the local flyers, local rules and any problems arising throughout the race. Special attention must be given to the following points:

- (a) National Coverage
(b) A variety of flying conditions at different contest venues
(c) Areas that can offer strong consistent conditions and the greatest options for various wind directions
(d) Suitability for locating the bases 100m apart plus offering a clear view of the expected flight line
(e) Local Rules

cont/...

Note: Placing the competition course to allow the racing flight to be achieved in an area of maximum compression or the 'accepted' safe racing line if prior knowledge of the slope and racing at the venue is established. If possible the turn judges and their sighting devices should be set back a reasonable distance from the racing line but always in a manner where they can reasonably be expected to witness the whole flight of the model. However the pilot always carries the responsibility of presenting the model to the turn judges in order for them to acknowledge the turn or entry/exit to/from the course.

7.4.9 Safety

- (a) The use of a safety 'line' is noted in the full FAI Rules. However in addition to this, a safety 'area' must be established a suitable distance away from the flight line. This safety area should be further extended to form a 5 to 6 m wide corridor to extend from immediately behind the pilot, and perpendicular to the flight line, out beyond the pits. All competitors and spectators must remain outside these safety areas until being called to fly. Pit areas should be located to one side or the other of this extended corridor.
- (b) A pilot who flies his model over the safety area whilst racing or encroaching the safety area at any time will be penalised 100 points.
- (c) A pilot whose model comes to rest within the safety area will be penalised by a zero score for that round.
- (d) All penalties will be deducted from the competitor's final score and will be noted on the score sheet of the round in which the penalty applies.

7.4.10 Timetable

Briefing - 9:15 am.

Start of First Round - soon as possible following the briefing.

Completion - as follows:

If the competition has not started by 12:30 pm, then it will be cancelled, unless the CD believes that a League Result (Four Rounds for League contests, and two-day National contests) can be obtained in the remaining time

7.4.11 Contest Progress

- (a) Pilots must clear the course as soon as possible after completing their contest flight, unless they have the CD's express permission to do otherwise.
- (b) Any pilot allowing their model to re-enter the course without the CD's express permission will be penalised 100 points
- (c) Any pilot flying his model in an area or manner which is considered by the CD to impede a following competitor, will be penalised 100 points
- (d) Pilots must land their models as soon as possible after completion of their contest flight. Prolonged periods of aerobatics, model trimming, high energy passes, dynamic soaring or similar whilst preparing to land, will in the first instance incur a warning from the CD. In each case any further infringements will incur a 100 point penalty.
- (e) Interruptions to the Competition, caused by the weather, will start a 30minute delay timer immediately the CD decides conditions are unsuitable for flying. The 30 minute timer will only stop when the CD considers the conditions are suitable to proceed, and the next Pilot is called to the 'ready box'.

cont/...

7.4.12

Protests

- (a) Any decision made by the CD may be protested in writing as soon as is reasonably practicable after the decision, but no later than the end of the round. The protest is to be handed to the CD along with a fee of twice the entry fee which will be returned if the protest is upheld. The CD will pass the protest on to the Panel.
- (b) A Panel will be nominated by the CD at the start of the contest. The Panel members will be competitors of that contest. If one of the Panel is directly involved in the protest, then he will stand down from the Panel while the protest is being considered.
- (c) If the protest is dismissed by the Panel, the protester retains the right to take the protest direct to BMFA Council through the BMFA Competition Secretary. For details of the procedure see General Rules, Section 2, Rule 2.2.13 which is repeated as Silent Flight General Rule 7.2.11 in this rule book.

7.5 F3K HAND LAUNCH R/C GLIDERS

7.5.1 F3K – UK RULES

7.5.1.1 General

- (a) The following rules are based on the FAI CIAM F3K class rules.
- (b) The only significant change, as BMFA variations, is the addition of text sections dealing with the permission to use mini-bungees. Where such specific text is introduced it is shown in italic text.
- (c) These rules define a multitasking contest for F3K “hand launched” radio controlled gliders where a number of specific tasks shall be accomplished.
- (d) Each competitor is allowed one helper who may time and verbally assist but must not become involved in the flying task or in the handling of the model during the slot time *other than for model release when the pilot is using a bungee. If the pilot they assist is using a bungee they may fetch the line and stretch the bungee.*

Proxy launching is allowed but only under the circumstances as defined by the F3K rules.

7.5.1.1.1 Frequency Control

The organiser must provide a robust method for frequency control. This may be implemented in various ways such as: a transmitter impound, antennae impound or by prior frequency verification backed by continuous frequency monitoring.

7.5.1.1.2 UK Rules Regarding Bungee Usage at UK F3K Contests

- (a) *As a UK local addition of the international F3K rules, specifically as a modification to rule 5.7.2.1, the use of a “mini bungee” for model launching is also permitted.*
- (b) *If a mini bungee is used, it must be supplied by the competitor and have the following characteristics:*
 - (i) *A maximum un-stretched length of 20 metres of which a minimum of 15 metres must be of non-stretching line.*
 - (ii) *A clearly visible pennant must be attached to the model end of the line*
 - (iii) *The bungee must be staked securely enough to withstand sustained tension. The stake should be positioned 5 metres upwind of the windward edge of the launching and landing area.*
 - (iv) *The maximum stretched length of the bungee at the point of launch shall not exceed 27 metres. Any competitor using a bungee shall also provide a 27 metre long non-elastic tape where one end is anchored by the bungee stake; the other end shows the maximum permissible stretch at launch. The maximum pull at a 27 metre stretch of the bungee shall not exceed 6 kg.*
 - (v) *The bungee and 27 metre tape shall be reeled in by the competitor at the end of his slot unless he, or someone else using this competitor’s bungee, is flying in the next slot.*

7.5.2 F3K UK Soaring League

7.5.2.1 Purpose

To encourage wider participation in F3K contests and provide a sound, fair and reliable basis for the selection of the UK F3K team for international contests.

Detailed information on contests dates, results, venues etc for the current year will be found on relevant web sites or via the BMFA web site links.

7.5.2.2 BMFA F3K League Competitions (General)

- (a) The league will be run annually, typically starting in March and ending in October.
- (b) The BMFA F3K annual league will consist of at least six official F3K contests.
- (c) Entry to BMFA F3K league competitions is open to all BMFA, SAA, RAFMAA and RNMAA members. For non-BMFA members refer to BMFA General Rule 2.1.6 (d) and (e).
- (d) BMFA F3K league competitions should attempt to use all of the officially defined FAI F3K tasks at each league competition if time allows and is therefore possible. Over the course of a year's BMFA league calendar competitions, all of the official FAI F3K tasks must have been run at least twice.

7.5.2.3 Definition of a BMFA F3K League Contest

- (a) A minimum of four full contest rounds shall be completed.
- (b) A minimum of 8 competitors must start the contest.
- (c) The contest is flown to the current FAI F3K.-
- (d) In F3K contests only one entry is permitted per competitor. No competitor can submit multiple entries to secure more flights and hence an unfair advantage over others.
- (e) If time and weather permits, a flyoff will be held when a minimum of seven contest rounds have been fully completed and will be held at the end of any contest. A flyoff must consist of at least three full flyoff rounds in order to be valid in terms of BMFA league scoring and will consist of the top placed 10% of the contest entry field or the top placed 5 competitors, whichever is greater.
- (f) Each competitor is allowed to use up to five model gliders in the contest

7.5.2.4 Overseas Contests

A competitor can submit up to two scores from overseas competitions if

- (a) The competition is listed on the current FAI Sporting Calendar.
- (b) The competition meets the minimum BMFA requirements as defined above.
- (c) The competition results are published on a recognised F3K web site.

7.5.2.5 League Competition Scoring

- (a) Only completed league contests as above shall be scored.
- (b) A competitor's competition score will be determined by the rules as defined in section 5.7.10.1 of the official FAI Rules.
- (c) A competitor's league competition score is to be calculated as follows:

The highest placed competitor, before any fly-off, is awarded 100 league points and the other league qualifiers scores use the formula below:

$$\text{Competitor's league score} = \frac{\text{Competitor's competition score}}{\text{Winner's competition score}} \times 100$$

- (d) In addition to a competitor's competition score, if a valid fly off is held at a contest.

cont/...

Fly-off competitors will have extra points added to their pre fly-off scores as follows:

The fly-off winner gains an extra 4 points, second 3 points, third 2 points, fourth 1 point and fifth 0.5 point. Thus a competitor coming fourth pre fly-off with a Percentage contest score of 98% who then wins the fly-off will increase his/her league score by 4 points giving a final total score for that league competition of 102% points.

If no flyoff is held at a competition, then only the main competition score will be used for each competitor

7.5.2.6 Final BMFA F3K League annual results

(a) Final F3K BMFA annual league scores shall be determined by adding the scores achieved in the completed league contests qualifying for the final league results as shown below:

Five or more contests	-	Best four results from such contests
Four league contests	-	Best three results from four contests
Three league contests	-	Best two results from three contests
Two league contests	-	Best two results from two contests

(b) In the event that more than one competitor achieves the exact same total annual BMFA league score, then a countback system shall be used to determine the final annual BMFA league placings, with a competitors 5th best contest scores being compared to determine who has the higher placing (and 6th best contest scores etc if necessary).

7.5.2.7 Contest Entry

(a) Contest entry shall be by pre-entry, to be received by the Contest Organiser (CO) not later than Thursday in the week preceding the contest. Entries may be accepted after this date at the discretion of the CO and on the day if spaces are available in the matrix. The CO may delegate the collection of entries to the CD or an assistant.

(b) Entry fees will be reimbursed to competitors if the CO receives cancellation of their pre-entry up to and including the Thursday in the week preceding the contest. The entry fee will not be reimbursed if the CO/CD receives cancellation after this day.

(c) Entries received after Thursday preceding the competition (including entries on the day) will incur double the normal entry fee.

(d) Entry shall include the following information

- (i) The date and venue of the competition
- (ii) At least three (3) even frequencies (35 MHz – channels 60 to 90)
- (iii) BMFA membership number (or equivalent). Proof of suitable insurance will be required before competitors are allowed to compete in the competition.
- (iv) Name, address and Telephone No. of each competitor.
- (v) Payment for entry will be collected at the pilots' briefing before the start of the contest.

(e) The basic details of the contest must be notified on the BMFA website or in the BMFA News at least one month before the contest.

7.5.3 F3K UK Team Selection

7.5.3.1

(a) The pilots who achieve 1st, 2nd and 3rd places in the annual BMFA F3K League shall be recommended to the BMFA Silent Flight Technical Committee (SFTC) as the UK senior team for that year. Competitors placing 4th and below shall qualify, in order corresponding to their final classification, for senior team placing as reserves, 4th place being 1st reserve, 5th place being 2nd reserve etc., subject to (d) overleaf.

- (b) Junior pilots who achieve 1st, 2nd and 3rd highest places in the annual BMFA F3K League shall be recommended to the BMFA Silent Flight Technical Committee (SFTC) as the UK junior team for that year. Junior competitors placing 4th and below shall qualify, in order corresponding to their final classification, for junior team placing as reserves, 4th place being 1st reserve, 5th place being 2nd reserve etc.

Note: The FAI considers a competitor to be a junior up to and including the calendar year (1st January - 31st December) in which he attains the age of 18 years.

- (c) For the purpose of team selection, juniors who attain the age of 18 during the team selection year shall be deemed a senior. This only applies when the team selection year precedes the Championship year
- (d) The team selection process shall be carried out each year even if there is no Championship scheduled for the following year. This is to ensure that official team(s) have been selected if a Championship is arranged at short notice. BMFA R/C Silent Flight Rules - Glider 58 Effective January 2007
- (e) *Any pilot using a mini-bungee for launch (as per UK local rules) at any BMFA league contests will not be eligible for F3K team selection.*

7.5.4 F3K UK Soaring League

7.5.4.1 Contest Schedule

- (a) Briefing (unless otherwise advised): 9.45 am
- (b) Start of first round (unless otherwise advised): 10.00 am

7.5.4.2 Contest Officials

- (a) The Contest Organiser (CO) is the person nominated by the SFTC for the administration of BMFA UK F3K League.
- (b) The Contest Director (CD) is the person nominated by the CO to direct the contest. The CO may nominate himself as CD. The CD may appoint assistants as required.
- (c) The CD will nominate a three-man Panel at the start of the contest. The Panel may consist of pilots, officials or observers.

7.5.4.3 Protests

The protest procedure is as noted in the BMFA General Rules, Section 2, rule 2.2.13 and repeated in this rule book as General Rules for Silent Flight Contests, rule 7.2.11, with the following additions:

- (a) If one of the nominated Panel members is directly involved in a specific protest then that person will stand down and a replacement juror will be nominated by the CD to act while that protest is being considered.
- (b) In consideration of the problems which would be caused to the running of the rounds of the contest, all protests should be passed to the CD in writing by the competitor within 30 minutes of the CD's decision being made. The protest must be accompanied by a fee of £10.00 which will be returned if the protest is upheld.

7.6 CLASS F3L – RADIO CONTROLLED THERMAL GLIDERS RES - PROVISIONAL RULES

7.6.1. General Rules

Known also as F3 RES (Rudder, Elevator, Spoiler), F3L is a class for radio-controlled thermal soaring gliders. The models feature a maximum two (2) metre span; are primarily of wooden construction; and are controlled only by rudder, elevator and spoiler(s). For launching, rubber bungee and towline is used. Due to the restrictions on construction and equipment, F3L provides a low cost introduction into R/C competitions that is achievable for anyone with average skills.

One key aspect of this class is to inspire young modellers and integrate them into the sport. The rules that follow shall be understood and interpreted with this in mind.

7.6.2. Definition of a Radio Controlled Glider

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. The model must be controlled by the competitor on the ground using radio control.

7.6.3. Model Specifications for Radio Controlled Thermal Gliders RES - F3L

A model consists typically of wings, fuselage and tail. Flying wing models that do not have a fuselage and rudder or fin, or none of these components are also allowed if they have only two (2) control surfaces. Each of these surfaces has to be actuated by only one servo. Otherwise, the construction rules for conventional models described herein are applicable.

7.6.3.1. The model is built mainly with wooden parts. The following methods are permitted:

- a) Wings built with ribs, open or covered by wood, "D-box", solid wood wings or a combination of solid wood and ribs.
- b) All parts must be made from wood except for leading-edge, spar(s) and joiners of the wing panels.
- c) The surface of the wings may be covered by film, silk, paper or polyester-fabric. Specifications a) to c) are applicable for tailplanes too.
- d) The distance between the rear edge of the spoilers and the trailing edge must be at least 5cm. One or two servos may activate the spoilers.
- e) The fuselage must be made entirely from wood, or with a tail boom made from fibreglass/carbon (GRP/CFRP) or Kevlar tube or profile. The tube/profile must not extend the front half of the wing area.
- f) The wooden surface of the fuselage may be covered with fibreglass/carbon (GRP/CFRP) or Kevlar, but not more than a maximum of 1/3rd of the total area. The surface may be protected with varnish or as described at c).
- g) Hinges and control rods are exempted from the GRP/CFRP constraint.
- h) The tow hook must not be larger than 5 mm in frontal width and 15 mm frontal height. It may be adjustable, but not by the radio. The release must not be executed by radio either.

7.6.3.2. Not allowed is the use of:

- a) positive or negative moulds for construction of the fuselage or wings or the surface treatment.
- b) a fixed or retractable arresting device (i.e. bolt, saw tooth-like protuberance, etc.) to slow down the model on the ground during landing. The model's underside must not have any protuberances other than the tow hook (see 7.6.3.1 h)) and surface control linkages.
- c) a fuselage nose with a radius less than 5 mm.
- d) ballast which is not carried internally and fastened securely within the airframe.
- e) any telemetry with the exception of radio signal strength, receiver temperature and battery voltage. No variometer permitted.
- f) any telecommunication between competitor and helpers, including mobile phones or walkie talkies.

7.6.4. Description of the Competition

- a) In the competition, at least four (4) qualifying rounds shall be flown. For each qualifying round, competitors shall be divided into flight groups. The results of each flight group shall be normalised to arrive at comparable scores between the flight groups. The highest raw score within each flight group will be assigned 1000 points and the remaining scores within that group shall be proportional to each competitor's raw flight score relative to the highest raw flight score within that group. The group size in the "Fly-Off" shall be the same as the group size in the preliminary rounds. Competitors with the highest aggregate normalised scores from the qualifying rounds, will compete in a "fly-off" (minimum 2 rounds) to determine the final classification.
- b) The competitor may use three (3) models in the contest. The competitor may change the models at any time, but within a round only if the model used initially came to rest within a radius of 15 metres from the assigned landing spot.
- c) The competitor may use up to three (3) helpers. They are to assist him in launching and retrieving the model, inform him of weather conditions and flight time and manage the hi-start (see 7.6.7). At least one helper shall constantly ensure that the pilot's assigned hi-start does not interfere with anyone else's hi-start. He also has to retrieve and return the hi-start immediately to its assigned position.
- d) In crosswind conditions, the Contest Director may determine that the farthest downwind competitor shall be first to start and so on, so that hi-starts do not interfere with each other during launching.
- e) The organiser should have official scorekeeper/timekeeper(s) available. If this is not the case, the pilot's helper may act as timekeeper, and at least one official supervising timekeeper will regularly check the flight times. Deviations of more than three (3) seconds in favour of the participant shall result in zero-score flight for the round.
- f) An official scorekeeper shall always measure the landing (for landing bonus points).

7.6.5. The Flying Site

- a) The competition must be held on a site having reasonably level terrain, which will minimise the possibility of slope and wave soaring.
- b) The flying site must have a starting line perpendicular to the wind direction, which has marked starting spots for each competitor that are at least eight (8) metres apart. At 150 metres upwind, there must be a line where the hi-starts are fixed (for possible exceptions see 7.6.7 d) and e)). The attachment points for hi-starts have the same spacing as the starting spots.
- c) The landing spots are situated at least fifteen (15) metres downwind of every starting spot.
- d) The landing spots and starting spots shall always be marked. A tape or string attached to the landing spot will measure the distance between the fuselage nose and the landing spot.
- e) The Contest Director shall determine the landing boundaries. Landing outside the boundary shall result in a zero score for that round (see also 7.6.11.2).

7.6.6 Interruptions

- a) The Contest Director has the right to interrupt the competition and relocate the starting line when the wind direction deviates too much or becomes a tailwind.
- b) The competition shall be interrupted by the Contest Director if the wind is continuously stronger than eight (8) m/s measured at two (2) metres above the ground at the starting line (flight line), for at least one minute.

7.6.7. Launching

- a) Identical hi-starts shall be provided and set up by the organiser.
- b) The hi-start consists of a rubber tube of $15 \pm 0,2$ metres length, a nylon towline of 100 ± 1 metre length with a minimum diameter of 0.7 mm and an attached pennant.
- c) The pull strength of the rubber tube shall not exceed forty Newtons (4 kgf) if extended to a length of 45 metres. The variance of the pull strength of all rubber tubes used for the competition must be less than four Newtons (0,4 kgf). The minimum pull strength, if pulled to 45 metres, must not be less than 27.5 Newtons (2.75 kgf).
- d) On flying sites that will not accommodate a total hi-start distance of 150 metres, the organiser may shorten the towlines. He may take a suitable reduction of the working time and flight time into account.
- e) The competition's preliminary information bulletin has to include any expected modifications in the total length of the hi-start and/or working time because of available space limitations.

7.6.8. Flights

- a) The competitor is entitled to at least four (4) official flights.
- b) The competitor is entitled to an unlimited number of attempts during the working time (see 7.6.11.1)
- c) An official attempt begins when the model leaves the competitor's or his helper's hand under the tension of the hi-start.
- d) In case of multiple attempts, the result of the last flight will be the official score.

7.6.9. Re-flights

The competitor is entitled to a new working time if:

- a) his model in flight or in the process of being launched collides with another model flying or being launched.
- b) a towline (other than his own) was not retrieved after launch and is blocking (covering) his own towline.
- c) his flight is hindered or aborted by an event beyond his control.

To claim a re-flight owing to the conditions stated above, the competitor has to make sure that the official timekeeper(s) has noted the interference and shall land his model as soon as possible after the event.

Note that if the competitor continues to launch or fly after such an interference affected his flight;

or re-launches after clearing the interference, he is deemed to have waived his right to a new working time.

7.6.10 Landing

- a) Before each flight each competitor will be assigned a landing spot corresponding to his assigned starting spot. It shall be the responsibility of the competitor to use the correct assigned landing spot.
- b) During the landing process, only the pilot and one of his helpers are allowed within 10 metres of the landing spot. Any other helper and timekeeper shall remain at their assigned starting spot.
- c) After landing, competitors may retrieve their model aircraft before the end of their working time, providing they do not impede other competitors or model aircraft in their group. A model thus retrieved may be relaunched during the working time. No landing score shall be recorded for a model that has been touched before the landing has been scored.
- d) After landing, the nose of the model must not be stuck in the ground. The landing is scored zero if the nose sticks into the ground and the model's tail is way above the ground.

7.6.11 Scoring

The raw flight score for each round consists of the flight time score and landing bonus points.

7.6.11.1 Scoring of the Flight Time

The attempt will be timed from moment of release from the launching device to either:

- a) when the model aircraft first touches the ground; or
- b) completion of the group's working time.

The maximum flight time is six (6) minutes (360s) within nine (9) minutes (540s) working time. If the flight is longer than six (6) minutes (360s), the overflying time will be deducted from six (6) minutes (360s). The flight time will be recorded in full seconds. The flight time score will be computed by assigning two (2) points to each second of flight time.

7.6.11.2 Scoring of the Landing

A landing bonus will be awarded in accordance with distance from the assigned landing spot, according to the following tabulation:

Distance from spot up to m(metres)	points	Distance from spot up to m(metres)	points
0.2	100	5	80
0.4	99	6	75
0.6	98	7	70
0.8	97	8	65
1.0	96	9	60
1.2	95	10	55
1.4	94	11	50
1.6	93	12	45
1.8	92	13	40
2.0	91	14	35
3.0	90	15	30
4.0	85	Over 15	0

Zero points for landing will be recorded for the competitor, if:

- a) the nose of the model sticks into ground on landing and the tail does not come to rest on the ground (see 7.6.10.d).
- b) the model sheds any parts on landing.
- c) the model is not airworthy after landing.
- d) the model has overflowed the group's working time.
- e) the competitor or helper touches the model during landing.
- f) the competitor or helper touches the model before the official scorekeeper has measured the distance.

Zero points for the entire round (flight and landing) are awarded if:

- a) the model comes to rest outside the landing boundary specified by the organiser, unless the competitor launches his model for another attempt.
- b) the model has overflowed the group's working time by more than 30 seconds.

7.6.11.3 Normalised Score

The pilot with the highest raw flight score within each flight group will be assigned 1000 points as a normalised score. The remaining normalised scores within that group shall be proportional to each participant's raw flight score relative to that group's highest raw score.

7.6.12

Final Classification

The final ranking of the competition is determined:

- a) for competitors who have qualified for the fly-off (see 7.6.4. a)), by the ranking after the fly-off.
- b) for the rest of the competitors, by the ranking after the qualifying rounds.

7.20 F5B

7.20.1 F5B UK Electric Leagues

7.20.1.1 Purpose

The leagues provide opportunity for competition in F5B (Open), and any starter leagues which the F5B flyers think can boost numbers.

Information on the Leagues, contest dates and results etc. can be obtained at info@f5b.co.uk, <http://www.f5b.co.uk> or via BMFA web site links

The rules for F5B open will be as per the FAI rules in that year with any UK variations as noted below.

Rules for the starter leagues will be based on the FAI rules in that year but with less restrictions on model size. Any UK variations will be noted on the website <http://www.f5b.co.uk>

7.20.1.2 Contest Entry

Entry to any league competition is open to all. Non-BMFA members should refer to BMFA General Rule 2.1.6 (d) and (e).

Competitors may enter only one League class (Open/Starter League) per competition.

7.20.1.3 Definition of a League Competition Qualifying for a Final League result

- (a) A minimum of 2 rounds shall be completed.
- (b) A minimum of 5 competitors shall start.
- (c) The contest shall be flown to current UK F5B rules.

7.20.1.4 Number of League Competitions Counting for Final League Score

Starter League best 4 competitions to count

F5B Open League best 6 competitions to count

When less than 8 competitions are flown:

Starter League - count 3 from 6+ / 2 from 4 or 5

F5B Open count 5 from 7 / 4 from 6 / 3 from 5

7.20.1.5 League Scoring

- (a) Only completed rounds shall be scored. When more than two rounds are flown the one with the lowest score will be discarded.
- (b) The winning competitor will be given 100 points. Other competitors shall be given a score based on their own score expressed as a percentage of the winner's score:

$$\text{Competitor's league score} = \frac{\text{Competitor's competitor score}}{\text{Winner's competitor score}} \times 100$$

- (c) Two models may be used in a single competition in each competition category.

7.20.1.6 Organisation of a Competition

- (a) Only completed rounds will be scored.
- (b) No test flying after the pilots briefing will take place without the CD's permission.
- (c) Briefing will be at 9.45 am.
- (d) Flying will start at 10.00 am.
- (e) The flying order for the day will be announced at the briefing and kept at base A.
- (f) The daily competition order will be determined by the CD to maintain a schedule which suits charging / cooling / recharging.

cont/...

- (g) Any competitor not ready to fly within five minutes of being called to the ready box will receive a zero score.
- (h) Any competitor who does not get a model airborne within two minutes of being requested to start will receive a zero score.
- (i) Any competitor crossing the safety line (excluding initial launch) will receive a zero score. CD will say at briefing if launching over the safety line will be permitted or not. If winds change significantly during the day then this may be revised.
- (j) A competitor who is allowed a re-flight will be given time to cool, and recharge batteries.
- (k) The CD should arrange for flying to cease as close to 6.00 pm as possible

7.20.1.7 Safety

Competitors should fly safely at all times with regard to people and property.

7.20.2 F5B UK Team Selection

7.20.2.1

- (a) All teams will be selected by means of the league system.
- (b) Selection for a World or European Championship team will be made in the year preceding the Championship.
- (c) The top three competitors in the F5B league at the end of the year will be recommended to the SFTC as the team members for the following year. If any of those qualifying do not wish to be a team member, the place or places will be offered to other competitors in order of league standing, ie 4th place in the league is 1st reserve for the team the following year.

7.21 F5J

7.21.1 UK Variations to F5J Rules

(These rule variations are noted under their FAI F5J rule number).

7.21.1.1 (5.5.11.2) Competitors and Helpers

- (a) Competitors and helpers must at all times after launching of models until the end of their flight remain upwind of the line of launch/landing spots, unless prior to the competition the Contest Director announces that this shall not apply. The CD may impose a penalty of 100 points where persistent and deliberate infringement occurs. Note: 'Launch/landing spots' refers to the spots provided under 7.21.1.2(c) below. 'Upwind' refers to the side of the line of launch/landing spots so designated by the CD.
- (b) Any use of telecommunication devices (including transceivers and telephones) in the field by competitors, helpers or team managers is not allowed. Other than as described under (c) below
- (c) Uploading of scores to be allowed provided:
 - i. All scores to be uploaded away from the flight line.
 - ii. Each competitor to keep a full written record of all their scores (for example on a printed GliderScore 'Score Record' card) and hand it in to the CD at the end of the competition.
 - iii. CD to ensure that all scores, especially uploaded scores, are confirmed as correct.

7.21.1.2 (5.5.11.3(a)–(e)) The Flying Site

- (a) The CD must establish a safe field layout that suits the space available for running the competition.
- (b) It is not necessary to establish either a Ready Box or a marked Safety Corridor.
- (c) A marked launch/landing spot for each competitor must be provided. These spots must be established with minimum 10m separation, preferably 15m, along a line approximately at right angles to the prevailing wind.

7.21.1.3 (5.5.11.8.1 (a)) Rounds and Groups

A minimum of four (4) competitors should be scheduled for each flight group.

7.21.1.4 (5.5.11.13 (d)) Final Classification

The CD may decide NOT to have a fly-off irrespective of entry numbers, provided this is announced prior to the competition starting.

7.21.2 UK F5J LEAGUE.

7.21.2.1 Introduction

Information on the Leagues, individual contest dates and results etc can be obtained at www.bmfa.org, www.barcs.co.uk or www.eSoaring.net.

7.21.2.2 Contest Entry

Entry to any league competition is open to all. For non-BMFA members refer to BMFA General Rule 2.1.6 (d) and (e).

Models will be allowed to compete in two classes, 'Open' class, (up to 4000mm

wingspan), 'Two Metre' class where the wingspan will not exceed 2000mm. In league competitions Open and 2M class models will always be run together in the same slots. The competitor will elect to fly either 'Open' or '2 Metre' before the start of the competition. Dual entry is not allowed.

A minimum of 8 competitors, in total, must start. 4 must be Open class.

7.21.2.3 Definition of a League Competition Qualifying for a Final League Result

- (a) A minimum of 4 rounds will be completed.
- (b) A minimum of 8 competitors will start.
- (c) The contest will be flown to current FAI F5J rules with or without UK variations.
- (d) At no time should the number of pilots starting in a single slot be less than 4.
- (e) In the event (d) occurs, a group of flyers can be completed by adding other competitor(s) selected by random draw. For the person(s) selected, the better of the two normalised scores from the original flight and second flight will be their official score. That normalised score will be returned to the original slot.

7.21.2.4 Number of League Competitions Counting for Final League Score

The total number of qualifying competitions run in all areas during the complete season, will decide the number of competitions used to count towards the final National league placings according to the following:

- 8 or more contests flown, 6 count
- 7 contests flown, 5 count
- 6 contests flown, 4 count
- 5 contests flown, 3 count
- 4 contests flown, 3 count
- 3 or fewer contests flown all count

If two or more pilots' final league score is 100, then these pilots only would have their next highest score (and if necessary their subsequent highest) also counted for final placings.

7.21.2.5 League Scoring

- (a) Only completed rounds will be scored. (Fly-Off scores are NOT counted)
- (b) The winning competitor will be given 100 points. Other competitors will be given a score based on their own score expressed as a percentage of the winner's score:

$$\text{Competitor's score} = \frac{\text{Competitor's score}}{\text{Competition winner's score}} \times 100$$

- (c) Note that in the event of a tie the discarded score will serve to give a position on the day. The tied competitors receive the same League score.
- (d) Three models may be used in any one competition.

7.21.3 UK F5J Team Selection Procedure

7.21.3.1

- (a) The UK F5J Team shall be selected on the basis of Pilots' results in their best two of three Competitions Including Team Selection flown in the Selection Year.
- (b) A 'Competition Including Team Selection' (hereafter CITS) shall be an F5J competition in the Selection Year flown to FAI F5J rules with UK Variations and scheduled for two days. The three designated CITSs will normally include the F5J competitions at Radioglide and at the Silent Flight Nationals.

The 'Selection Year' means the calendar year immediately preceding the year of the World or European Championships for which the team is being selected.

For the purposes of team selection:

- (i) 'Results' means results in the qualifying rounds, ignoring the results in any fly-off.
 - (ii) 'Pilots' means competitors who are members of the BMFA or the SAA and the scores of any competitor not a member of either the BMFA or the SAA shall be ignored in calculating the Team Selection Results
 - (iii) A CITS shall be treated as a single two day competition, so there can be no more than one discard of a Pilot's lowest score in each CITS.
- (c) Where, as is normal, three CITSs are held, selection for the team shall, as indicated in (a) above, be based on the total of the best two of each Pilot's CITS scores, with the top Pilot being awarded 100 points and others Pilots award points proportional to their scores. Where only two CITSs are held, selection for the team shall be based on the total of each Pilot's scores in both competitions. Where only one CITS is held, selection for the team shall be based on each Pilot's score in that competition.
- (d) In the event of a tie, the higher place will be awarded to the Pilot who has the highest discarded score in any one CITS being used for Team Selection in relation to that Pilot. In the event of a tie on highest discarded scores, the higher place will be awarded to the Pilot who has the second highest discarded score and so on until the tie is resolved.

7.21.3.2

- (a) The Pilots who achieve the 1st, 2nd and 3rd highest total points score shall be recommended by the BMFA SFTC as the UK team pilots and 4th, 5th etc. as reserves - subject to achieving a score of at least 90% of the overall winner.
- (b) The top three junior Pilots in the overall results shall be recommended by the BMFA SFTC as the UK junior team.
- (c) If a junior pilot finishes in the top three senior team places then he shall have the option of competing as part of the senior team or as a junior only or as a member of both teams.

Note: The FAI considers a competitor to be a junior up to and including the calendar year (1st January – 31st December) in which he attains the age of 18 years. For the purposes of team selection, a junior is someone who will still be a junior at the time of the Championship for which the team is being selected.

7.22 eSOARING

7.22.1 eSoaring (Height Limited Rules) Class

7.22.1.1 Objective

To provide an electric powered model aircraft thermal soaring competition, where the initial launch height is the same for all models and a single electric motor run is used to achieve the set launch height.

The launch must be followed by pure gliding flight with no further motor assistance.

Models will be allowed to compete in two classes, an 'Open' class, (up to 4000 mm wingspan), using the model definition in 7.22.1.2 (a) below and a 'Two Metre' class ('2M') where the wingspan will not exceed 2000 mm. No other restrictions, other than those of 7.12.2 (a) below, will apply.

In league competitions Open and 2M class models will always be run together in the same slots.

The competitor will elect to fly either 'Open' or '2M' before the start of the competition. Dual entry is not allowed.

7.22.1.2 General Rules

(a) Definition of Electric Powered Model Glider.

A model aircraft in which lift is generated by aerodynamic forces acting on surfaces remaining fixed in flight, except control surfaces, which performs manoeuvres controlled by the pilot on the ground, using radio control.

Model aircraft with variable geometry or area must comply with the specification when the surfaces are in maximum and minimum extended mode.

(b) General Characteristics of RC Electric Powered Model Aircraft (FAI F5 class)

Maximum surface area.....	150dm ² (2325in ²)
Maximum flying weight.....	5Kg (11.023lbs)
Maximum surface loading	75g/dm ² (24.51oz/sq ft)
Minimum surface loading	12g/dm ² (3.95oz/sq ft)

(c) The power source will consist of any kind of rechargeable batteries (or secondary cells). Mechanical or chemical modification of the individual cells, e.g. to reduce their weight, is not allowed, except that insulation sleeves of individual cells may be changed.

(d) Batteries may be charged or changed at any time during the competition.

(e1) Any device for the transmission of information from the model aircraft to the pilot, either directly or indirectly, is prohibited. This includes any visual, electronic or any other sort of signal from the model. Any use of telecommunication devices (including transceivers and telephones) in the field to communicate with competitors, their helpers or team managers while doing the competition task is not allowed. The only exception to this rule is the use of devices that cannot in any way be used to enhance the pilots chances in the contest.

(e2) Any device in addition to the approved height limiter and/or motor run timer, which is carried in or on the model and which enables total or partial independent control over the model is prohibited.

(f) Any ballast used must be carried internally and fastened securely within the airframe.

(g) Any type of electric motor may be used.

(h) The competitor may use a maximum of three model aircraft in the contest. The competitor may combine the parts of the model aircraft during the contest,

provided that the resulting model aircraft conforms to the rules and that where applicable, the parts have been checked for conformity before the contest.

7.22.1.3 The Flying Site

- (a) The competition should be held on a site having reasonably level terrain, which will minimise the possibility of slope and wave soaring.
- (b) The launching line will be arranged crosswind and shall include launch marks on the launch line at least 10 meters, preferably 15 metres apart, one for each competitor of a group.
- (c) The launch marks will also act as the centre of the landing circles; at which point a 10 metre graduated landing tape is fixed to the ground. The launch/landing markers should be laid out with reference to the wind direction, strength and site topography.
- (d) Competitors & timekeepers must remain upwind of their respective landing circle centres at all times after launching of models.

Competitor and Helper

- (j) Each competitor must operate the radio equipment personally.

Each competitor is permitted a maximum of 1 helper and 1 timekeeper. The helper may act as timekeeper where permitted and may also launch the competitors model.

7.22.1.4 Contest Models & Organisation

- (a) Specific model characteristics – eSoaring.

Open class models must not exceed 4,000 mm projected wingspan. 2 Metre class models must not exceed 2,000 mm projected wingspan.

No fixed or retractable arresting device (ie bolt, saw tooth-like protuberance, etc) is allowed to slow down the model aircraft on the ground during landing. Vertical tail fins and/or rudders are excluded from this requirement so long as they are not expressly designed to arrest the movement of the model on landing.

The model must be fitted with an approved* type of height limiter switch. Wherever the height limiting switch is positioned in the model, it must not be located where there is any likelihood of a greater air pressure reading being generated than exists outside the model at any time. (e.g. close to any forward-facing air scoop)
*See appendix for definition of approved height limiter switches.

The height limiter must not be enclosed in any material, or in any position or any part of the model, which could result in distortion of actual air pressure variations.

Models must include sufficient static venting to ensure that outside pressure is duplicated inside the model at the limit switch location.

It is the competitor's responsibility to ensure that the altimeter switch fitted to their model is correctly installed and operates in full accordance with the rules. (Note that this may include setting the altimeter switch to less than the set height, to ensure that launch height rules are complied with in full.) At no time may a switch be set to a height greater than the height set for the round by the CD.

- (b) Model processing - initial

Before the start of the contest the CD (Contest Director), or his representative must be satisfied that all models being flown are fitted with an approved height limiting switch. The switch must be set to cut all power to the electric drive motor so that the model aircraft completes its launch phase at an indicated pressure altitude above launch level of 175 metres, or after 30 seconds of motor run time, whichever occurs first.

The 175 metres set launch height may be reduced at the discretion of the CD for

any reason, before or between rounds at any contest.

To facilitate processing and enable subsequent flight line processing all limiting switches must be easily removable and/or easily accessible for checking. They must also be equipped with a multi digit numerical display, or alternatively with a plug into which an external multi digit numerical display unit can be connected, without the need to disconnect the unit from the receiver and/or the ESC (Electronic Speed Controller), or remove it from the model.

(c) Model certification

Where a model has been previously subject to the above checks, and no changes have been made that could affect the launch height, the CD may choose to allow that model to fly in the contest without further checking.

(d) Model processing – subsequent

The CD may at any time before, during or immediately after the contest, ask for any competitors limiter settings to be checked for any non-compliance with the rules or to resolve any dispute, either by direct in flight comparison with a master altimeter or with the use of approved altimeter checking equipment.

At any time during the contest, at least three pilots, selected by the CD, will have their launch heights checked using an appropriate height reader. The launch altitude for compliance purposes shall be the maximum altitude recorded from the moment the model leaves the launchers hand until 10 seconds after the motor is stopped. (As used for FAI F5J competitions.) The altitude in metres shall be rounded down to the nearest metre.

It is the competitor's responsibility to ensure that an appropriate height reading device is available for checking purposes.

Any checked flights with launch heights in excess of the set launch height + 10% tolerance, will score zero points.

Master altimeters or check meters will be calibrated in accordance with International Standard Atmosphere (ISA). The ISA to be used for FAI matters is given in ICAO Document 7488 tables 3 and 4. It assumes a temperature and pressure at sea level of 15C and 760 mm of mercury (or 1013.25 mb/hPa). Above sea level, it assumes a constant temperature lapse rate from sea level of 6.5C per 1000 m (1.98C/3.56F per 1000 ft) rise in height, up to an altitude of 11,000 m (-56.5C).

(e) Entry, organisation of flying slots and timekeeping responsibilities

If NOT using approved radio equipment operating on the 2.4GHz frequency band competitors must enter two different transmitter frequencies with 10 kHz minimum spacing. The competitor can be called to use either of these frequencies during the contest, as long as the call is made at least 1/2 hour prior to the beginning of a round.

Pre-entry is advisable to enable the CD to arrange radio frequencies in advance so as to permit as many simultaneous flights as possible.

Any number of rounds may be scheduled but a minimum of 3 rounds must be completed to validate the contest and for the scores to count in the UK league. Unless otherwise specified in a league proposal for a given year, a minimum of four competitors are required to start in Open class to validate the contest as a league competition. There is no minimum entry requirement for 2M class models. (Note 7.22.2.3 (b) A minimum of 8 competitors will start.)

The flying order will be organised (ie by matrix) such that, as far as possible during the competition, each competitor will fly against as many other competitors as possible and not against the same competitor(s) in every slot. The only exception to this rule being in single slot per round contests.

The competitor is entitled to 5 minutes preparation time. Preparation time for the next slot in each round will start as soon as all the models from the previous slot have landed. The CD may announce an alternative (longer or shorter) preparation start time where appropriate.

It is the competitor's responsibility to provide a helper / timekeeper, with the possible exception of International Competitions, where timekeepers may be allocated by the organisers.

It is the competitor's responsibility to ensure that their timekeeper correctly times the flight and delivers the score to the CD or his representative

The CD must clearly indicate the start and end of the working time audibly and if possible visually.

Scratching from a contest with entry cancellation is not permitted for any reason after the 1st round has been completed.

7.22.1.5 Contest Rules

The working time for the contest is 11 minutes.

All models must be launched and landed within this time period.

One re-launch is allowed at any time during the 11-minute working time, a re-launch negates the first flight.

Models may be launched at any time during the 11-minute working time.

The target flight time is 10 minutes, terminating in a spot landing.

In the event that a flight exceeds 10.00 minutes, the excess time in seconds will be subtracted from the flight time score.

Any landing bonus is unaffected provided the landing is completed within the 11 minutes working time and also within 10 minutes and 30 seconds (a total of 630 seconds) of the start of flight time.

If the model lands either after the end of working time or after 10 minutes 30 seconds of flight time, a zero score will be allocated.

The motor in Open Class models must not be run after the first 30 seconds of flight time. Following a motor cut by the height limiter, the pilot must then manually move the motor control to an off position within the next ten seconds, that positively ensures no possibility of the motor re-starting.

The 10-minute target time INCLUDES the launch time and starts from the point at which the model leaves the launchers hand under the pull of the electric motor.

The timekeeper, when requested, should assist the pilot by announcing the motor run time during the launch phase, advising elapsed time during flight and the approaching end of the 10-minute target time and/or the 11-minute working time.

The timekeeper must stop the watch when the model first touches the any object in contact with the ground, any pilot, helper or timekeeper or spectator.

7.22.1.6 Launching

There is an official attempt when the model aircraft has left the hands of the competitor or those of a helper under the pull of the electric drive motor. CD may vary this rule for safety reason. (ie pusher propped models)

Power must not be applied to the altimeter switch until the model is on the flight line at ground level and within 1 metre of the launch/landing marker. At this time, the competitor must ensure that the motor control and/or switch is set to zero. (ie the full stop position of the motor), before arming the altimeter switch.

All models must be launched into wind and within four meters of the competitors launch / landing marker. This rule applies for the initial launch and any subsequent re-launch.

The motor run during the climb must be continuous.

7.22.1.7 Landing

Each competitor must have his own landing target.

The targets will be laid out with reference to the wind and site topography.

All landings should be made into wind towards the landing marker in the same general direction as launch. In still or variable light air conditions the launch / landing direction will be established by the CD.

After landing models may be retrieved only if doing so does not impede other competitors.

7.22.1.8 Re-flights

The competitor is entitled to a new working time only if the attempt was hindered or aborted by an unexpected event, not within the competitor's control.

Equipment or model failure does not qualify as grounds for a re-flight.

To claim a re-flight, considering the above-mentioned conditions, the competitor has to make sure that his official timekeeper has noticed the hindering conditions and he must land his model as soon as possible after this event.

Note that in a case where the competitor continues to launch or continues to fly after hindering conditions affected his flight, or does launch after clearing of the hindering condition(s), he is deemed to have waived his right to a new working time.

The new working time is to be granted to the competitor according to the following order of priorities:

- (1) In an incomplete group in a different (later) round, or in a complete group on additional launching/landing spots.
- (2) In a new group of several (minimum 4) re-flyers. The new group of re-flyers can be completed by other competitors selected by random draw. If the frequency of the drawn competitor does not fit or the competitor cannot fly, the draw is repeated.
- (3) In the original group at the end of the ongoing round.

In priorities 2 and 3 above, the flyer granted the re-flight shall have the score achieved returned to the original slot/round.

In priorities 2 and 3 above, any person involved in the re-fly, other than the flyer granted the re-flight, will receive the better of their two scores.

7.22.1.9 Scoring

All flight times are to rounded DOWN to the nearest second.

One point per full second of flight time, to a maximum possible total of 600 points (10:00 minutes).

One point will be deducted for every second flown in excess of 600 seconds (10:00 minutes).

A zero score will be recorded for a flight where the motor run is more than 30 seconds.

A zero score will be recorded if the motor is re-started by the competitor at any time during the flight. Momentary 'motor on' glitches, not instigated by the pilot, do not constitute a motor run or a reason for recording a zero score.

If the model aircraft loses any part either during the launch or in flight that flight will incur a 100 point penalty. The loss of any part in collision with another model aircraft or during landing, (ie in contact with the ground), is not taken into account.

cont/...

Landing bonus will be awarded provided the model comes to rest within the arc of the landing tape. The measurement shall be taken from the nose of the model. No landing bonus is awarded if the model touches the competitor, his helper and/or timekeeper during landing.

Landing points will be awarded as below:

0+to 1m	=	50pts
1+ to 2m	=	45pts
2+ to 3m	=	40pts
3+ to 4m	=	35pts
4+to 5m	=	30pts
5+ to 6m	=	25 pts
6+ to 7m	=	20pts
7+ to 8m	=	15pts
8+to 9m	=	10pts
9+ to 10m	=	5 pts
Over 10 meters	=	0pts

A landing more than 75 meters from the target receives zero flight score. This distance rule may be varied by the CD dependant on the local topography and / or the confines of the flying site.

For each slot, the competitor with the highest score (flight + landing bonus) will receive 1000 points. Competitors with lower scores will be awarded a proportion of the winner's score ie score x 1000/winner's score.

7.22.1.10 Final Classification

Where more than 3 rounds are flown the lowest score will be discarded.

In the event of a tie the discarded score will decide places on the day but both competitors will receive equal League scores.

In the event that this does not produce a winner then a one round fly-off will be held using these same rules.

7.22.2 eSoaring (Height Limited) League

7.22.2.1 Introduction

Information on the Leagues, individual contest dates and results etc. can be obtained at www.eSoaring.net or via BMFA web site links

7.22.2.2 Contest Entry

Entry to any league competition is open to all BMFA, SAA, RAFMAA and RNMAA members.

7.22.2.3 Definition of a League Competition Qualifying for a Final League result

- (a) A minimum of four rounds will be completed.
- (b) A minimum of eight competitors will start.
- (c) The contest will be flown to current BMFA UK eSoaring rules.
- (d) At no time should the number of pilots starting in a single slot be less than 3.
- (e) In the event (d) occurs, a group of flyers can be completed by adding other competitor(s) selected by random draw. For the person(s) selected, the better of the two normalised scores from the original flight and second flight will be their official score. That normalised score will be returned to the original slot.

7.22.2.4 Number of League Competitions Counting for Final League Score

- (a) The best four of all the qualifying BMFA League competitions entered will be used to produce the league table.
- (b) In the event of a tie, places will be determined by counting back the next best rounds.
- (c) A total of three qualifying competitions must be entered to ensure a place in the league.

7.22.2.5 League Scoring

- (a) Only completed rounds will be scored.
- (b) The winning competitor will be given 100 points. Other competitors will be given a score based on their own score expressed as a percentage of the winner's score:

$$\text{Competitor's score} = \frac{\text{Competitor's score}}{\text{Competition Winner's score}} \times 100$$

- (c) Note that in the event of a tie the discarded score will serve to give a position on the day. The tied competitors receive the same League score.
- (d) Three models may be used in any one competition.

7.23 GPS-Triangle

7.23.1 GPS-Triangle – UK rules

7.23.1.1 Object

To encourage participation in Sport and Light Class GPS-Triangle competitions.

Object of a GPS Triangle contest is to fly around a virtual triangle as often as possible in a defined period. To obtain comparable results, the maximum starting altitude and the maximum starting speed when crossing the starting line are equal for all pilots. In addition, GPS-Triangle also provides a Speed Heat, where pilots have to fly around the virtual triangle only one time as fast as possible.

All competitions in the U.K. sanctioned by the BFMA as a National Championship will be run to the rules detailed below.

7.23.1.2 General

The rules shall be the English-language version of the international GPS-Triangle rules for the relevant Class displayed on the <https://gps-triangle.net> web site, subject to any UK variations.

7.23.1.3 Sport Class

Sport Class Gliders are defined as having a maximum Wing Span of 5000mm, a maximum wing loading of 75g/dm², and a maximum weight of 7Kg

The Full 'Specification of a Sport Class Glider' in the GPS-Triangle rules are to be found at <https://gps-triangle.net> and shall apply in place of Rule 7.2.5 'Characteristics of a Model aircraft' in this Rule Book.

7.23.1.4 Light Class

Light Class Gliders are defined as having a wingspan of between 2700-4000mm, a wing loading of between 12-30g/dm², and a maximum weight not exceeding 3000g.

The Full 'Specification of a Light Class Glider' in the GPS-Triangle rules are to be found at <https://gps-triangle.net> and shall apply in addition to Rule 7.2.5 'Characteristics of a Model aircraft'.

7.23.1.5 Variations by the Contest Director

The Contest Director may vary the international GPS-Triangle rules, or this rule, where and to the extent that he or she considers it necessary for reasons of safety, to comply with any legal requirement or because of local circumstances.

7.24 FX-RES

7.24.1.1 UK FX-RES rules for combined F3L (previously referred to as F3RES) and F5RES 2 metre span Rudder, Elevator, Spoiler models predominantly constructed from wood, as a variant of F3L and F5RES competition rules.

7.24.1.2 Objective:

- (a) To provide an inexpensive class of radio-controlled model glider soaring with straightforward rules which emphasise pilot skills, to be promoted for wide scale adoption and enjoyment in the UK model flying community.
- (b) FX-RES competitions are intended for F3L and F5RES pilots to jointly compete alongside each other.

7.24.1.3 Models:

Model construction of both F3L and F5RES models must comply with the prevailing F3L rules. High starts (bungees) must comply with the prevailing F3L rules, and should be installed and operated safely with due attention paid to ground anchorage. The F3L rules can be found on the FAI website, and at the time of writing are contained in Section 4 of the Sporting Code (Aeromodelling), Volume F3 – 2022 edition effective 1st January 2022. They can be accessed with the following link: https://www.fai.org/sites/default/files/sc4_vol_f3_soaring_22.pdf

7.24.1.4 The flying site:

- (a) The competition must be held on a site having reasonably level terrain, which will minimise the possibility of slope and wave soaring.
- (b) The flying site must have a starting line which is perpendicular to the wind direction and has marked starting spots for each competitor that are at least eight (8) meters apart. At 150 meters upwind there must be a line where the hi-starts are fixed. The attachment points for hi-starts have the same spacing as the starting spots.
- (c) The Contest Director shall determine the landing boundaries. Landing outside the boundary shall result in a zero score for that flight.

7.24.1.5 Interruptions:

- (a) The Contest Director has the right to interrupt the competition and relocate the starting line when the wind direction deviates too much or becomes a tailwind.
- (b) The competition shall be interrupted by the Contest Director if the wind is continuously stronger than eight (8) m/s measured at two (2) metres above the ground at the starting line for at least one minute.

7.24.1.6 Contest flights:

- (a) The working time is 4 hours, to commence and complete with a designated signal.
- (b) The competitor is entitled to a maximum of 10 flight attempts during the working time.
- (c) Each flight attempt must be timed and recorded by a helper.

- (d) For F3L, once a competitor has reached or exceeded a flight time of 6 minutes only a maximum time (max) of 6 minutes can be recorded.
- (e) For F5RES, once a competitor has reached or exceeded a flight time of 6 minutes and 30 seconds only a maximum time (max) of 6 minutes and 30 seconds can be recorded
- (f) An official attempt begins when the model leaves the hand of the competitor or their helper.

7.24.1.7 Re-flights:

- (a) A competitor will be entitled to a re-flight in the following circumstances:
- (b) If his/her model in flight or in the process of being launched collides with another model flying or being launched.
- (c) A towline (other than their own) was not retrieved after launch and is blocking (covering) their own towline.
- (d) When the flight is hindered or aborted by an event beyond his/her control.
- (e) To claim a re-flight owing to the conditions stated above, the competitor has to make sure that the time-keeper has noted the interference and shall land his model as soon as possible after the event.
- (f) If the competitor continues to launch or fly after such an interference affected his flight; or re-launches after clearing the interference, he is deemed to have waived his right to a re-flight

7.24.1.8 Launching F3L:

- (a) Identical hi-starts shall be provided and set up by the organiser to comprise a rubber tube of 15 (± 0.2) metre length, a nylon towline of 100 (± 1.0) meter length with a minimum diameter of 0.7 mm and a pennant attached in proximity of metal tow ring as per F3L rules
- (b) It is forbidden to anchor the stretched line to a ground anchor, peg or object (other than the model before launch) for any reason at any time, due to the risk of serious injury
- (c) The model must be hand launched by either the competitor or a helper.

7.24.1.9 Launching F5RES:

- (a) The model must contain a height limiter that cuts the power to the motor at either a height of 100 meters or after a 30 second motor run, whichever occurs first.
- (b) The model must be hand launched by either the competitor or a helper.

7.24.1.10 Landing:

- (a) Each contestant must land within a 30-metre radius of their launch point **and** within the boundaries of the designated flying field area.

7.24.1.11 Scoring of the flight time:

- (a) For F3L the attempt begins when the model leaves the competitor's or the helper's hand under the tension of the hi-start. The flight will be timed from the moment the model disconnects from the bungee.
- (b) For F5RES the attempt begins from the moment the model leaves the competitor's or the helpers under the power of the motor. The flight will be timed from the moment the model is airborne.
- (c) The flight time will end when the model comes to a stop after landing.
- (d) If a competitor has exceeded 6 flight attempts (up to a maximum of 10) then they can drop their worst times and submit the best 6 times achieved.
- (e) For F3L, the maximum flight time that can be recorded is six minutes (360 seconds). For F5RES, the maximum flight time that can be recorded is six minutes and thirty seconds (420 seconds). The flight time will be recorded in minutes and full seconds.
- (f) A score is zero if the model lands outside the designated landing area.

7.24.1.12 Final classification:

- (a) The respective final ranking of the F3L and F5RES competitors determined by the sum of their best 6 flight times.
- (b) In the case of more than a single pilot achieving 6 max's in either class of model; a fly off will be flown and the final ranking of the respective class competition will be determined by sum of best 6 flight times, plus the respective fly-off outcome as applicable.
- (c) If a single pilot achieves 6 maxes in either class of model, then an additional flight organised as a fly-off will be completed, for purposes of achieving National League scoring parity with fly-off contenders in other events.

7.24.1.13 Fly-Off:

- (a) The fly-off will comprise a maximum flight of 6 minutes for F3RES, or 6 minute and thirty seconds for F5RES; including a spot landing attempt to be completed within a 9-minute fly-off slot. The fly-off slot to be commenced and completed by a designated signal.
- (b) Landing spot(s) will be positioned 10 metres downwind of the respective launch position(s)
- (c) There is no limit on number of attempts within the slot, but the final flight time will count.
- (d) Landing after the completion signal will result in a zero time.
- (e) The model must be hand launched by either the competitor or a helper, and an additional helper is allowed to retrieve hi-start to facilitate relaunching of F3RES models.
- (f) In the event of 2 or more pilots achieving a max in either class, the ranking will be determined by closest landing from spot, measured from nose of model to centre of spot.

7.24.1.14 Generally:

- (a) In the event of any dispute or practical interpretation of the contest rules, Contest Directors decision (or a decision by majority verdict of a jury of 3 competing pilots nominated by Contest Director before start of competition) will be final on the day
- (b) Competitors sign up to enter and confirm they hold current BMFA membership with third party insurance cover.
- (c) Competitors sign up to confirm they agree to comply with the rules.

7.24.1.15 National FX-RES League:

- (a) Information on the FxRES League and qualifying events is available on www.fxres.co.uk
- (b) The winner's time including the fly-off bonus time will be used for scoring each event results for inclusion in National FX-RES League ranking.
- (c) For league scoring, each event scores will be normalised to the winner's total flight time, as follows:

$$\text{Competitors Event Score} = \frac{\text{Competitors total time}}{\text{Winning Competitors total time}} \times 100$$

- (d) The best 5 qualifying event scores will be used to produce the annual League Table and identify the overall winner.

Appendix 1

Notes for Organisers of 100S Contests

1.1 Slot Time Signals

The organisers must ensure that each competitor has no doubt about the precise second that the slot time starts and finishes. Visual indication may be by raising of a flag or coloured board situated near the contest control. Audible indication may be by motor horn, aerosol horn or bell etc.. It should be remembered that sound does not travel far against the wind; care must therefore be taken with the positioning of the noise source.

1.2 The Matrices

- (a) The method by which each competitor is given his/her competition number from the matrix is left to the organisers.
- (b) Once the contest has started, neither the matrix table or competition number must be changed.

1.3 Percentage Slot Scores by Use of Pocket Calculator

Dividing 1000 by the top slot score gives a result that is entered into the memory as a constant, thus:

Step 1 Switch on calculator and ensure that display and memory are clear.

Step 2 Key 1000, Key 'divide by', Key Top Slot Score, Key =, Key M+

To obtain the percentage slot scores, each lower score is then multiplied by this constant thus;

Step 3 Key Slot Score, Key 'multiply by', Key MR, Key =

The result, ignoring all figures after the decimal point, is the corrected score for that competitor in that slot.

Step 4 As a final check, repeat step 3 using the top slot score (ie Top slot score times MR =). The answer should be 1000.

1.4 Time-keepers Duties

Organisers must make sure that all who are to act as time-keepers are fully aware of just how important their duties are and to make certain that they are conversant with the rules, particularly those that require quick positive action in order not to jeopardise a competitors chances in the competition.

If a transmitter control compound is in use, the time-keepers will be responsible for handing transmitters to competitors prior to the start of the slot time and for returning them to control at the end of the slot or flight, whichever is earlier.

The organisers must ensure that an official is nominated to note any competitor who over-flies the end of the slot time and to time the excess time

1.5 Use of the Matrix

Depending on the number of competitors in the contest and the frequencies available the organisers must sort the competitors into frequency groups as noted on the selected matrix. Note that at this stage some competitors may have to change their radio frequencies.

The organisers can then assign each entrant a competition number from the matrix for Round 1 of the contest, the competitor keeping this number for the remainder of the contest.

Appendix 2

Approved Height Limiter Switches

2.1 In order to gain approval, any height limiting switch must demonstrate that it will consistently enable an electric glider, when operated within the rules of the competition, to finish its launch phase at an ISA 15C pressure indicated altitude of 175 metres (or at a lower height as might be defined at the discretion of the CD during a competition) or after 30 seconds of motor run time, whichever occurs first. This requirement must be met whether or not the unit incorporates an 'anti-zooming' feature.

2.2 Manufacturer RC Electronics

RC Altimeter #2 BASIC with firmware version 2.17 (or later approved versions).

RC Altimeter #2 PRO with firmware version 2.17 (or later approved versions).

RC Multi 2 with firmware version 1.13, 1.15 (or later approved versions
(Note that Version 1.14 was not issued.)

Note: All RC Electronics devices must use the RC FXJ Programming Card with firmware version 1.6 (or later approved versions) in order to read launch height.

2.3 Manufacturer – Aerobtec

Altis Micro with firmware V1.0

Altis v3 with firmware version 2.3, (or later approved versions).

The Aerobtec Altis v3 device must use the Aerobtec Programming Card with firmware version 2.1 (or later approved versions) in order to read launch height.

Altis v4 with firmware version 1.5 (or later approved versions).

Altis v4 and Altis v4+ firmware 2.0 (or later approved versions.)

Note: The Altis v4 uses an inbuilt display to show current device settings and launch height. During competition, the user must have appropriate facilities available to make any launch height adjustments as may be required at the discretion of the CD.

2.4 Manufacturer – Winged Shadow

Sky Limit with firmware version 1.4, (or later approved versions).

The Winged Shadow device must use the Sky Limit Programmer in order to read launch height.

Note: All switched/height readers must be configured to display F5J style height readout. ie the maximum height reached by the model between launch and 10 seconds after the motor is cut either by the run timer or manually.

Note: Alternative devices are known to be in development and, once they are commercially available and have gained approval, they too will be listed for use in these competitions.

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