

5.6. CLASS F3J - THERMAL DURATION GLIDERS

Object: To provide a man-on-man contest for competitors flying radio-controlled thermal duration soaring gliders. In the contest, several qualifying rounds are flown. For each qualifying round, competitors are divided into groups. The scores in each group are normalised to give them meaningful scores irrespective of changing weather conditions during a round. The competitors with the top aggregate scores in the qualifying rounds then fly at least two further fly-off rounds as a single group to determine the final placing. The scheduled number of fly-off rounds shall be announced by the Contest Director before the start of the contest.

5.6.1. General Rules

5.6.1.1. 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. Model aircraft with variable geometry or area must comply with the specification when the surfaces are in maximum and minimum extended mode. The model aircraft must be controlled by the competitor on the ground using radio control. Any variation of geometry or area must be actuated at distance by radio. The use of any onboard-sensed data to automatically move the control surfaces or to modify the aircraft geometry is prohibited.

5.6.1.2. Prefabrication of the Model aircraft

Paragraph B.3.1 a) of Section 4, Part 2 (builder of the model aircraft) is not applicable to this class.

5.6.1.3. Characteristics of Radio Controlled Gliders

- a) Maximum Surface Area 150 dm²
 Maximum Flying Mass 5 kg
 Loading 12 to 75 g/dm²
 Minimum radius of fuselage nose 7.5 mm
- b) The radio shall be able to operate simultaneously with other equipment at 10 kHz spacing below 50 MHz and at 20 kHz spacing above 50 MHz. When the radio does not meet this requirement, the working bandwidth (max. 50 kHz) shall be specified by the competitor.
- c) Any technological device used to aid in supplying data of the air's condition or direct feedback of the model's flight status is prohibited during the flight. These devices include any transmission or receiving devices not used to directly control the model aircraft (telephones, walkie-talkies, telemetry of airspeed and altitude etc), temperature detecting devices (thermal imaging cameras, thermometers etc), optical aids (such as binoculars, telescopes etc), and distance/altitude measuring devices (GPS, laser range finders etc). Telemetry of signal strength at the aircraft receiver and state of the receiver battery and GPS location data that is not displayed in any form to the pilot or helpers during a flight, and not used for aircraft control is permitted. Use of corrective eyeglasses, lenses and sunglasses are permitted. If an infringement of this rule occurs, the pilot will be disqualified from the contest.
- d) The competitor may use three model aircraft in the contest.
- e) The competitor may combine the parts of the model aircraft during the contest, provided the resulting model aircraft conforms to the rules and the parts have been checked before the start of the contest.
- f) For the sake of randomness of the starting order among the successive rounds, each competitor must enter three different transmitter frequencies with 10 kHz minimum spacing. The organiser is entitled to use any of these three frequencies for setting the flight matrices. Once the competitor is given one of these three frequencies he must not change to another frequency for all flights during the whole of the preliminary rounds other than for reflights. In case of a reflight the competitor can be called to use either of these three frequencies for this reflight only, as long as the call is made at least 1/2 hour prior to the beginning of the reflight in written form to the competitor (or team manager when applicable).
- g) All ballast must be carried internally and fastened securely within the airframe.
- h) No fixed or retractable arresting device (i.e. bolt, saw tooth-like protuberance, etc) is allowed to slow down the model aircraft on the ground during landing. The underside of the model aircraft must not have any protuberances other than the tow hook and surface control linkages (with or

without fairings). The tow hook must not be larger than 5 mm in frontal width and 15 mm frontal height.

5.6.1.4. Competitors and Helpers

- a) The competitor must operate his radio equipment himself.
- b) Each competitor is allowed three helpers. When a team manager is required, he is also permitted to help the competitor. A maximum of two helpers are permitted for towing during the launch as described in 5.6.8.2.

5.6.2. The Flying Site

5.6.2.1. The competition must be held on a site having reasonably level terrain, which will minimise the possibility of slope and wave soaring.

5.6.2.2. a) The flying site shall include a marked launch corridor of 6 metres width with a central launch line. The launch corridor shall be arranged crosswind and must include launch marks on the central launch line at least 15 metres apart, one for each competitor of a group.

- b) The flying site must include landing spots, one for each competitor in a group. Each landing spot will correspond to one of the launch marks and will be arranged at least 30 metres downwind of the launch corridor.

5.6.2.3. The centres of the landing circles and the launch line must always be marked. At the discretion of the Contest Director, marks indicating the circumference of the circles may be omitted and replaced by the use of other means of measuring, such as a tape, to check distances from the centre of the circles.

5.6.2.4. Safety Rules

- a) Contact with an object within the defined safety area (including the launch corridor) will be penalised by deduction of 300 points from the competitor's final score.
- b) Contact with a person within the defined safety area (including the launch corridor) will be penalised by deduction of 1000 points from the competitor's final score.
- c) For each attempt only one penalty can be given, if a person and at the same attempt an object is touched the 1000 points penalty is applied.
- e) Penalties shall be listed on the score sheet of the round in which the infringement(s) occurred.
- f) If necessary the organiser may define a part of the airspace as safety space. In such a case he must appoint at least one official who observes the border (vertical plane) by a sighting device. This official must warn the pilot if his glider crosses the border. If the glider does not leave the safety space immediately a penalty of 300 points is given.

5.6.3. Contest Flights

- 5.6.3.1. a) The competitor will be allowed a minimum of five (5), preferably more, official flights.
- b) The competitor will be allowed an unlimited number of attempts during the working time.
 - c) 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 towline.
 - d) In the case of multiple attempts, the result of the last flight will be the official score.
 - e) All attempts are to be timed by two stopwatches. If no official time has been recorded, the competitor is entitled to a new working time according to the priorities mentioned in paragraph 5.6.4.

5.6.4. 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 in flight, or with a model in the process of being launched.
- b) his model in flight or in the process of being launched collides with another competitor's towline.
- c) the competitor's towline is hit by another model in flight or in the process of being launched.
- d) the attempt has not been judged by the official time-keepers.
- e) his attempt was hindered or aborted by an unexpected event, not within his control. Crossed lines are not considered as reason for re-flight.
- f) A towline (other than his own) was not removed after launch and is blocking (covering) his own towline.

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

Note that in the case the competitor continues to launch or continues to fly after hindering conditions affected his flight or does re-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, or in a complete group on additional launching/landing spots, if there is no member of his team in this group;
2. if this is not achievable, then in a new group of several (minimum 4) re-flyers. The new group of re-flyers will be completed by other competitors selected by random draw to the number of 4. If the frequency or team membership of the drawn competitor does not fit or the competitor will not fly, the draw is repeated;
3. if this is also not achievable, then with his original group at the end of the ongoing round.

In priority-case 2 and 3, the better of the two results of the original flight and the re-flight will be the official score, except for the competitors who are allocated the new attempt. For those the result of the re-flight is the official score. A competitor of this group who was not allocated the new attempt will not be entitled to another working time in case of hindering.

5.6.5. Cancellation of a flight and/or disqualification

- 5.6.5.1.**
- a) The flight is cancelled and recorded as a zero score if the competitor used a model aircraft not conforming to any item of rule 5.6.1. In the case of intentional or flagrant violation of the rules, in the judgement of the Contest Director, the competitor may be disqualified.
 - b) The flight in progress is annulled and recorded as a zero score if the model aircraft loses any part during the launch or the flight, except when this occurs as the result of a mid-air collision with another model aircraft or towline.
 - c) The loss of any part of the model aircraft during the landing (coming into contact with the ground) is not taken into account.
 - d) The flight is cancelled and recorded as a zero score if the model aircraft is piloted by anyone other than the competitor.
 - e) The flight is cancelled and recorded as a zero score if, during landing, some part of the model aircraft does not come to rest within 75 metres of the centre of the competitor's designated landing circle.

5.6.5.2. Neutralisation of a flight group

During the fly-off rounds and for the last group of a qualification round, and only within the first 30 seconds of the working time, the Contest Director has the right to neutralise the ongoing flight group in events leading to a reflight according to 5.6.4 a) – e).

If an event according to 5.6.4.a) – e) occurs within the first 30 seconds of the working time, the Contest Director needs to:

- state the immediate neutralisation of the group clearly to all competitors; stop the running working time;
- call all competitors to land as soon as possible.

This round will be started again with the preparation time as soon as possible.

5.6.6. Organisation of the Flying.

5.6.6.1. Rounds and Groups

- a) The flying order for the initial qualifying rounds shall be arranged in accordance with the transmitter frequencies in use to permit as many simultaneous flights as possible. A minimum of 6 and preferably 8 to 10 competitors should be scheduled for each group.
- b) The flying order shall be scheduled in rounds sub-divided into groups.

- c) The flying order shall be determined by a matrix system that minimises situations where competitors fly together more than once (see paragraph 5.6.12.3).

5.6.6.2. Flying in Groups

- a) Competitors are entitled to five minutes preparation time, which is counted from the moment his group is called to take position at the designated launching area, to the start of the group's working time.
- b) The working time allowed to each competitor in a group shall be of exactly ten (10) minutes duration.
- c) The organisers must positively indicate the start of a group's working time, by audible signal; see 5.6.12.1 for details.
- d) Audible and visual signals must be given when eight (8) minutes of the group's working time has elapsed.
- e) The end of the group's working time must be positively indicated by audible signal, as for the start.
- f) Any model aircraft airborne at the completion of the working time must land immediately.

5.6.7. Control of Transmitters

- 5.6.7.1. a) Competitors using 2.4 GHz spread spectrum transmitters may retain their transmitters during the competition. Transmitters using other frequencies may be impounded at the discretion of the Contest Director. (See also ABR B.11.2; B.11.3 & B.11.4.)
- b) If a transmitter pound has to be used for am/fm transmitters then
- Failure to hand in a transmitter before the official starting time of the contest may result in the competitor forfeiting his first round flight.
 - The competitor must hand over his transmitter to the designated official (usually the timekeeper) immediately after finishing his flight
- c) The only permitted flying during the competition hours are the official competition flights. Other than for ground testing of equipment using 2.4 GHz spread spectrum, any other transmission or any flight shall only take place with the permission of the Contest Director.
- d) A penalty of 300 points shall be applied to any competitor making an unauthorised transmission or flight without the permission of the Contest Director. If this transmission or flight results in injury to personnel or damage to property, then the competitor will be disqualified from the whole competition.

5.6.8. Launching

- 5.6.8.1. The contest director defines the start direction. The start should be executed as far as possible against the wind inside of the marked launch corridor (5.6.2.2). An attempt is annulled and recorded as zero if the model aircraft is launched outside the launch corridor.

- 5.6.8.2. The launch of the model aircraft will be by hand held towline only.

- 5.6.8.3. a) Tow persons are allowed no mechanical aids, other than pulleys, to facilitate towing but may use a hand reel (hand winch) to recover the towline after launching is complete.
- b) Immediately after release of the model aircraft from the launching cable, without delay the towline helpers must either recover the towline on a hand reel (hand winch) or, when a pulley is used, they must continue to pull the towline until it is completely removed from the towing area in order to avoid crosscutting with other lines which are still in a state of towing or will be used for towing.

This is not applicable if a line break occurs. In this case only the residual line attached to the ground or used by the towing helpers has to be removed from the launching area. A designated judge (launch line-manager) has to overview and control and, if necessary, - call on towline helpers to remove their lines from the launching area after the model aircraft is released. If his demand is refused, then the pilot, whose towline helpers refused, shall be penalised by 100 points.

- c) If towing with pulley, behind the pulley an unbreakable shield with diameter of minimum 15 cm must be fixed to protect the towing helpers against broken whipping line ends.

In the case of towing with a pulley two helpers have to operate the pulley and one of the following preventive measures must be taken:

- The pulley and protective shield must be connected to a 5 mm minimum diameter cord arranged in a V , the arms of which must have a length of 1,5 to 3,0 metres and with hand loops on each end; or
- The pulley and protective shield must be connected to the centre of a sufficiently strong yoke of minimum 80 cm length with handholds at each end.

In the case of towing with a pulley, the towline end must be attached to a ground anchor, which is fixed by metal ropes to two additional safety pins. The length of the main stake must be at least 50 cm from the towline linkage. The safety stakes must be at least 30 cm long. The main stake must be driven into the ground to a depth at least 40 cm. The towline linkage must not exceed 10 cm above the ground. The ground anchor-dimensions and its setup could look like as shown in the drawing "Guideline for proven ground anchor setup".

5.6.8.4. The Contest Director will designate a launching area. Tow-persons must remain within this area whenever they are launching a model aircraft.

5.6.8.5. The launching device (hand-reel, pulley, anchor, if used, and all other equipment used during launch, except the launching cable with or without any attachment of maximum 5 cm³ or 5 grams) must neither come loose nor be released by the competitor or his helpers during the launch. The competitor will be penalised by the cancellation of his flight and no other attempt is permitted.

5.6.8.6. Any model aircraft launched prior to the start of a group's working time must be landed as soon as possible and re-launched within the working time. Failure to comply will result in cancellation of the competitor's score for that round.

5.6.8.7. Towlines

- Tow-lines for each competitor must be laid out only during the competitor's five-minute preparation time and must be retrieved by the end of his working time.
- The length of the towline shall not exceed 150 metres when tested under a tension of 20 N.
- The towline must be made of polyamide monofilament material throughout its length. It must have pennant with an area of 5 dm². A parachute (of five (5) dm² minimum area) may be substituted for the pennant provided it is not attached to the model aircraft and remains inactive until the release of the towline. Linkages (couplings, knots, loops, etc.) of different material are permitted up to a total length of 1.5 metres. They shall be included in the total length of 150 metres.

5.6.9. Landing

5.6.9.1. Before the contest commences, organisers must allocate a landing circle to each competitor. It is the competitor's responsibility to ensure that he always uses the correct circle for landing.

5.6.9.2. Officials (timekeepers) must remain upwind of the 15 metre radius circle during the working time before the landing. The competitor and one helper are allowed inside the 15 metre radius circle.

5.6.9.3. 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.

5.6.10. Scoring

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

- the model aircraft first touches the ground; or
- the model aircraft first touches any object in contact with the ground. Parts of launching devices (tow-lines) extending away from the ground shall not be interpreted as objects in contact with the ground; or
- completion of the group's working time.

5.6.10.2. The flight time in seconds shall be recorded to one decimal place.

5.6.10.3. A penalty of thirty (30) points will be deducted from the flight score for overflying the end of the group's working time for up to a maximum of one (1) minute.

5.6.10.4. A zero score will be recorded for overflying the end of the group's working time by more than one (1) minute.

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5.6.10.5. A landing bonus will be awarded in accordance with distance from the landing spot marked by the organisers according to the following tabulation:

Distance from spot (meters)	points	Distance from spot (meters)	points
up to m	Points	up to m	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	90	15	30
4	85	over 15	0

5.6.10.6. The distance for landing bonus is measured from the model aircraft nose at rest to landing spot allocated to the competitor by the organisers.

5.6.10.7. A contest number, derived from the matrix, must be allocated to each competitor, which must be retained throughout the qualifying rounds.

5.6.10.8. If the model aircraft touches either the competitor or his helper during the landing manoeuvre, no landing points will be given.

5.6.10.9. No landing bonus points will be awarded if the model aircraft overflies the end of the group's working time.

5.6.10.10. The competitor who achieves the highest aggregate of points comprising of flight points plus landing bonus points minus penalty points will be the group winner and will be awarded a corrected score of one thousand points for that group.

5.6.10.11. The remaining competitors in the group will be awarded a corrected score based on their percentage of the group winner's total score before correction (i.e. normalised for that group) calculated from their own total score as follows:

$$\frac{\text{Competitor's own score multiplied by 1000}}{\text{Highest points total scored in the group before correction}}$$

The corrected score shall be recorded (truncated) to one place after the decimal point.

5.6.11. Final Classification

5.6.11.1. a) If seven (7) or fewer qualifying rounds are flown, the aggregate score achieved by the competitor will be the sum of these scores for all rounds flown. If more than seven rounds are flown, then the lowest score will be discarded before determining the aggregate score.

b) At the end of the qualifying rounds, a minimum of nine (9) competitors with the highest aggregate scores will be placed together in a single group to fly the fly-off rounds. At the organiser's discretion, if frequencies permit, the number of competitors qualifying for the fly-off may be increased.

5.6.11.2. The working time for each competitor who qualifies for the fly-off rounds will be of fifteen (15) minutes duration. As before, audible signal will be given at the start of the group working time, at exactly thirteen (13) minutes and at exactly fifteen (15) minutes.

5.6.11.3. The scoring of the fly-off rounds shall be as in section 5.6.10.

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- 5.6.11.4.** Final placing of the competitors who qualify for the fly-off shall be determined by scores in fly-off; their scores in the qualifying rounds being discarded. If less than six (6) fly-off rounds are flown their aggregate scores over the fly-off rounds is counted, if six (6) or more fly-off rounds are flown the worst result of each competitor is discarded.

In the event that two or more competitors have the same aggregate fly-off score, final positions of those competitors shall be determined by their respective position in the qualifying rounds; the higher positioned competitor being awarded the higher final position.

5.6.12. Advisory Information

5.6.12.1. Organisational Requirements

- a) The organisers shall ensure that each competitor has no doubt about the precise second that the group's working time starts and finishes.
- b) Audible indication may be by automobile horn, bell or public address system etc. It must be remembered that sound does not travel far against the wind; therefore the positioning of the audio source must be given some thought.
- c) To be a fair contest, the minimum number of fliers in any one group is four. As the contest proceeds, some competitors may be obliged to drop out for various reasons. When a group occurs with three (3) or fewer competitors in it, the organisers move up a competitor from a later group, ensuring if possible, that he has not flown against any of the others in previous rounds and of course that his frequency is compatible.

5.6.12.2. Time-keeper Duties

- a) Organisers must make sure that all who are to act as timekeepers 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 competitor's chances in the contest.
- b) The timekeepers will be responsible for handing transmitters to competitors prior to the start of the working time and for returning them to Control immediately after the end of the flight.
- c) The organisers must ensure that an official is nominated to note any competitor who overflies the end of the group's working time and to time his excess flight time.

5.6.12.3 Groups

- a) The composition of groups should minimise the situations where any competitor flies against another many times, except in the fly-off. It is recognised that, in practice, with certain numbers of competitors or where more than three rounds are flown, a situation where a competitor flies against another more than once may be unavoidable. This must be kept to a minimum.
- b) In order to minimise the time needed to run the contest, it is very important to arrange the starting order to get the minimum number of groups per round, with the maximum possible competitors in each group. It is recommended that groups with vacant starting positions are put at the end of each round, to keep space free for any reflights.
- c) The starting order has to ensure that, as far as possible, there are no competitors of the same team in the same group.