

VOLUME F3 SOARING

PART FIVE - TECHNICAL REGULATIONS FOR RADIO CONTROLLED CONTESTS

5.8. CLASS F3B-e – MULTI-TASK GLIDERS WITH ELECTRIC MOTOR

5.8.1. General Rules

5.8.1.1. Definition of a Radio Controlled Glider with electric motor

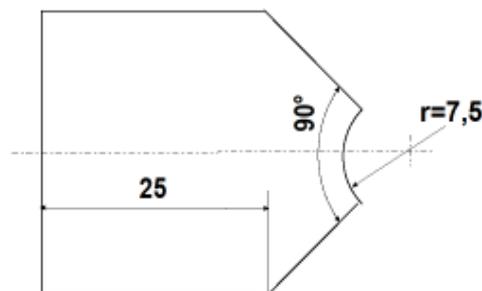
Model aircraft which is provided with an electric motor. Model aircraft with variable geometry or area must comply with the specification when the surfaces are in maximum and minimum extended mode. The model aircraft must be controlled by the competitor on the ground using radio control. Any variation of geometry or area must be actuated at distance by radio control.

5.8.1.2. Prefabrication of F3B-e Model Aircraft

Paragraph B.3.1 a) of Section 4B (Builder of the Model aircraft) is not applicable to class F3B-e.

5.8.1.3. Characteristics data of Radio Controlled Gliders F3B-e

Minimum wing-loading	35 g/dm ²
Maximum wing-loading	75 g/dm ²
Maximum flight mass	5 kg
Maximum energy	400 Wmin
Maximum "Average input performance"	800 W
Battery	Any type of rechargeable batteries
Motor	Any type of motor
Minimum spinner radius	7.5 mm (see template)



TEMPLATE FOR SPINNER RADIUS

5.8.1.4 Technical equipment

a) Each model must be fitted with an approved Logger (LOG) in accordance with the Technical Specification published in F3B-e LOG Technical Documentation.

b) The LOG must be approved by the EDIC (ELECTRONIC DEVICES IN COMPETITIONS WORKING GROUP).

c) The LOG is located in the electric circuit between the battery and the motor.

- d) Installation of the LOG in the model shall be in accordance with the requirements as detailed in the Technical Guidance Documentation.
- e) Proper operation of the LOG including any associated display and its compatibility with other control equipment installed in the model is the responsibility of the individual competitor.
- f) To facilitate initial technical processing, all LOGs must be easily removable for compliance checking. The receiver command signal connection to the LOG must be easily accessible so that at any time during the competition the organisers have the option of installing a monitoring LOG via a branching Y lead.
- g) To enable the timekeeper to record data required for scoring purposes there must be easy access to the display or the connector for a plug in display. It must not be necessary to disconnect the LOG from the receiver or to remove it from the model.
- h) The use of an additional extension cable is permitted for connecting the display. It is the responsibility of the competitor to ensure that any incorrect connection does not result in damage to the LOG or the display.
- i) The functions of the LOG is to record "altitude", "voltage" and "current" and to represent "altitude", "amount of energy" and "average performance" at a display.
- j) The motor can be stopped by the pilot or is stopped automatically if the energy-limit is reached. If the energy exceeds 400 Wmin there is a deduction of 0,5 points / 1 Wmin.
- k) If the "average performance" exceeds 800 W there is a deduction of 1 point / 10 W.
- l) LOG data must be shown to the official immediately after the flight.

5.8.1.5. General requirements

a) No fixed or retractable arresting device (i.e. bolt, sawtooth-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 protuberance other than

b) Any transmission of information from the model aircraft to the competitor is prohibited, with the exception of signal strength and voltage of the receiver battery. 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.

c) The competitor may use a maximum of three (3) model aircraft in the contest. All exchangeable parts (wing, fuselage, tail planes, **joiner**) must be marked uniquely and in a way that does not allow replication of this mark on additional parts.

d) The competitor may combine the parts of the model aircraft during the contest; provided the resulting model aircraft used for flight conforms to the rules and that the parts have been checked before the start of the contest. See also 5.8.2.1.

5.8.1.6. Competitors and Helpers

The competitor must operate his radio equipment personally. Each competitor is permitted up to three (3) helpers, including the team manager, who must not give any turning signals near base B during tasks B and C.

5.8.1.7. Definition of an Attempt

a) For each task (ref. 5.3.2.1.), during the working time allocated, the competitor is entitled an unlimited number of attempts. An attempt starts when the model aircraft is released from the hands of the competitor or his helper(s) under **the power of the electric motor**. No change of model aircraft or parts of the model aircraft is allowed after starting the first attempt.

b) The competitor is entitled to a new working time period if any of the following conditions occur and are duly witnessed by an official of the contest:

i) his model aircraft in flight collides with another model aircraft in flight, or another model aircraft in the process of launch (released for flight by the competitor or his helper). Should the flight continue in a normal manner, the competitor may demand that the flight in progress be accepted as official, even if the demand is made at the end of the original working time

ii) his model aircraft in the process of launch collides with another model aircraft also in the process of launch (released for flight by the competitor or his helper), or with another model aircraft in flight. Should the flight continue in a normal manner, the competitor may demand that the flight in progress be accepted as official, even if the demand is made at the end of the original working time

iii) the flight has not been judged by the fault of the judges or timekeepers.

iv) in the case of an unexpected event, outside the competitor's control, the flight has been hindered or aborted.

c) For all cases described above the competitor may demand that the flight in progress in which the event occurred will be accepted as official. Note is made that in the event the competitor continues to launch or does a re-launch after clearing of the hindering condition(s) he is deemed to waive his right to a new working time.

d) The competitor has the right to change his model during a current round and this is not withstanding rule 5.8.2.1. if:

1. his model collides with another model in flight; he has the right for a reflight, but his model is not reparable in time.

2. his model has landed (final or intermediate landing) and is damaged by a landing model of another competitor and the model is not reparable in time.

3. in the case of 1) or 2) above, once the competitor has exercised his right to change his damaged model aircraft, that model must not be used in any subsequent task(s) in the current round, with the exception stated in paragraph 5.8.1.3.f).

e) In case of additional attempts in task A (Duration) during a round or task B (Distance) during a round, the competitors entitled to that additional attempt must fly within a group that is not complete in number or in one or more groups newly formed.

5.8.1.8. Definition of the Official Flight

The official flight is the last flight performed during the working time.

5.8.1.9. Cancellation of a Flight and Disqualification

a) Unless otherwise specified a flight in progress will be annulled for an infraction of any rule. 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 will be penalised with 100 points if the model aircraft loses any part either during the launch or the flight. The loss of any part in a collision with another model aircraft or during landing (i.e. in contact with the ground) is not taken into account. The penalty of 100 points will be a deduction from the competitor's final score and shall be listed on the score sheet of the round in which the penalisation was applied.

c) The competitor is disqualified if the model aircraft in flight is controlled by anyone other than the competitor.

d) If the model aircraft touches either the competitor or his helper during landing manoeuvres of task A, no landing points will be given.

5.8.1.10. Organisation of Starts

a) The competitors shall be combined in groups with a draw, to permit as many flights simultaneously as possible. Incomplete teams may be to their request combined into a working team. The draw is organised in such a way that there are no competitors of the same working team in the same group. At World and Continental Championship the reigning champion, if participating outside the national team, may join his national team to form a working team.

b) The composition of the groups must be changed every round in order to have different combinations of competitors. For task A (duration), there must be a minimum of five competitors in a group. For task B (distance) there must be a minimum of three competitors in a group. For task C (speed) a group may consist of a minimum of eight competitors or all competitors.

It is preferable for the organiser to orientate the starting order for task C at the inverted ranking calculated out of the results of all tasks flown until that moment. For the first round the starting order for task C should always be identical with the starting order of task A. Alternatively the organiser may use the task A starting order in subsequent task C rounds.

c) The result of a group is annulled if only one competitor has a valid result. In this case, the group will fly again and the result will be the official result.

d) The flying order of different groups is established with the draw too. A different starting order shall be used for each round.

e) The competitors are entitled to 5 minutes of preparation time before the starter gives the order to count off working time.

5.8.1.11. Organisation of Contests

- a) For transmitter and frequency control see Section 4B, para B.10.
- b) The official will issue the transmitter to the competitors only at the beginning of their preparation time, according to 5.8.1.8.
- c) Sighting apparatus, winches or any device constituting an obstacle, should be placed on Base A and Base B, a minimum of 5 metres from the safety line for task C. Apparatus for judging the safety plane in task C shall be placed a minimum distance of 5 metres from Base A or B outside the course.
- d) The contest director must inform without delay the competitor and/or his team manager about any decision taken, eg in the case of a re-fly, a penalty etc.

5.8.1.12. Safety Rules

- a) The organiser must clearly mark the boundary between the landing area and the safety area assigned for other activities. (See sketch "F3B / F3B-e flying field layout" page 10)
- b) After release of the model aircraft from the hand of the competitor or helper, any contact of the model aircraft with any object (earth, car, stick, plant, tow-line, etc) within the safety area will be penalised by 300 points, except in the circumstances described in paragraph 5.8.1.5 b) items 1, 2, 3, and 5. Contact with a person within the safety area will be penalised by 1000 points. The number of contacts during one attempt does not matter (maximum one penalty for one attempt). The penalty will be a deduction of 300 or 1000 points from the competitor's final score and shall be listed on the score sheet of the round in which the penalisation was applied.

5.8.1.13. Weather Conditions / Interruptions

- a) The maximum wind speed for F3B contests is twelve (12) m/sec. The contest has to be interrupted or the start delayed by the contest director if the wind speed exceeds twelve (12) m/sec measured three (3) times for at least twenty (20) seconds in a time interval of five (5) minutes two (2) metres above the ground at the start and landing area.
- b) In the case of rain, the contest director can interrupt the contest during task A and task B. When the rain stops, the contest starts again with the group that was flying, which receives a re-flight.
- c) In the case of rain, the contest director must interrupt the contest during task C. When the rain stops the contest start again with the pilot that was flying, which receives a re-flight. The whole group of task C must be divided in three (3) or four (4) groups depending on the total number of competitors before the task starts. If the weather is stable only one group is evaluated; if the competition must be interrupted more than fifteen (15) minutes, then the interrupted group must start from the beginning and the results are evaluated for each group.

5.8.2. RULES FOR MULTI-TASK CONTESTS

5.8.2.1. Definition

a) This contest is a multi-task event for radio controlled gliders **with electric motor**, which includes three tasks:

- A) Duration
- B) Distance
- C) Speed

b) The combination of task A, B and C constitutes a round. A minimum of two rounds must be flown. Except at World and Continental Championships the last round may be incomplete, i.e. only one task or any combination of two tasks. In the case of a World Championships each competitor is entitled a minimum of five rounds subject to the provision of rule B.15, Section 4B.

At the discretion of the organiser any task may be flown first in a scheduled round. In the case of unstable weather conditions, lack of time or technical issues it is possible fly task A or B of the following round before the task C of the current round. No other change of the schedule is allowed. The scheduled task must be completed. If the model is damaged during the predrawn task (A or B) the competitor is entitled to change the model for task C of the previous round.

c) Any single round must be completed with the same model aircraft, without any change of parts. Only the addition of ballast (which must be located internally in the model aircraft and with which the model aircraft must conform to rule 5.8.1.3.) and/or change of angles of setting are allowed.

d) Variation of geometry or area is allowed if actuated at distance by radio control.

5.8.2.2. Launching / Relaunching

a) All launching shall take place in an area as designated by the organiser with provisions made for launching into the wind.

b) **The landing for a relaunch has to take place in an area designed by the contest director; out of safety reasons it's not allowed catching the model. The restart must be done behind base A in direction to base B.**

The reset of the logger must be done manually; a reset via transmitter is forbidden"

5.8.2.3. Task A-Duration

a) This task must be completed within 12 minutes from the order of the starter, including the **rise** time.

b) One point will be awarded for each full second from the time the **motor has stopped** to the time the model aircraft comes to rest **on the defined flying site**, up to a maximum of 600 points (i.e. 10 minutes maximum), for each full second of flight within the working time; **if the model does not land on the defined flying site the whole flight is zero.** No points will be awarded for flight time in excess of working time

c) One point will be deducted for each full second flown in excess of 600 seconds (10 minutes).

d) Additional points will be awarded for landing, depending upon distance from the spot marked by the organiser, according to the following table:

Distance from spot (m)	Points	Distance from spot (m)	Points
1	100	9	60
2	95	10	55
3	90	11	50
4	85	12	45
5	80	13	40
6	75	14	35
7	70	15	30
8	65	over 15	0

The distance is measured from the model aircraft nose (**spinner**) when at rest to the centre of the spot.

No points will be awarded for the quality of landing.

No landing bonus will be awarded if the flight time exceeds 630 seconds.

The measured distance is rounded to the nearest higher metre.

e) For model aircraft still in the air when the 12 minutes expire, the elapsed flight time only will be taken into consideration for scoring, without any additional points for the precision landing.

f) A classification based on decreasing number of points awarded will be compiled, called "Partial Score A" - see 5.8.2.6.

g) One of the functions of the LOG is to record and display the maximum altitude attained (start altitude) above a ground level reference between the instant of motor start and ten (10) seconds the motor is stopped.

h) The recorded start altitude in metres shall be rounded down to the nearest metre.

i) Each metre of the recorded start altitude results in a deduction of half (0,5) a second / metre up to 220 metre and three (3) seconds / metre above 220 metre.

j) Where the score is negative (below zero), a zero score will be recorded.

Installation of the LOG in the model shall be in accordance with the requirements as detailed in the Technical Guidance Documentation.

b) Proper operation of the LOG including any associated display and its compatibility with other control equipment installed in the model is the responsibility of the individual competitor.

c) To facilitate initial technical processing, all LOGs must be easily removable for compliance checking.

The receiver command signal connection to the LOG must be easily accessible so that at any time during the competition the organisers have the option of installing a monitoring LOG via a branching Y lead.

To enable the timekeeper to record data required for scoring purposes there must be easy access to the display or the connector for a plug in display. It must not be necessary to disconnect the LOG from the receiver or to remove it from the model.

The use of an additional extension cable is permitted for connecting the display. It is the responsibility of the competitor to ensure that any incorrect connection does not result in damage to the LOG or the display.

5.8.2.4. Task B - Distance

a) The model must past Base B either during motor run or after motor cut-off, in order to legitimate the flight.

b) This task must be completed within 7 minutes from the order of the starter, including the rise time. The trial begins only after the motor has stopped.

c) When the model aircraft, in flight, first crosses Base A (imaginary vertical plane) in the direction to Base B, the actual flight time of 4 minutes maximum starts, during which time the model aircraft must complete as many legs as possible from the starting Base A to Base B and conversely.

d) A visual system or a combined audiovisual system announces to the competitor when his model aircraft crosses the Base A or Base B (imaginary vertical planes). The absence of a signal will indicate that the model aircraft has failed to correctly cross the base. The instruments used to check the crossing of the vertical planes must assure the parallelism of such planes. Timing and signalling shall occur when any part of the **complete** model aircraft in **flight** crosses the base. If an audiovisual system is used, signalling is also valid when the audio system fails.

e) The models will be identified by flags of different colours for each competitor in the group. When the competitor intends to start his helper waves the flag; when the model is identified by the associated helpers at base A and base B they wave the flag with the corresponding colour as well. At that moment the pilot can launch.

The competitor must stay within a distance of 10 metres either side of Base A during the timed flight.

f) For a model aircraft which lands within 4 minutes flight time only the full 150 metre legs will be counted. For model aircraft still in the air when the 4 minutes flight time or 7 minutes expires, whichever comes first, only the completed legs at that moment will be taken into account.

g) After having completed the task, the model aircraft must land on the defined flying site outside 018.the safety area(s) otherwise the flight is zero.

h) A classification based on decreasing number of total flown legs during the flight time will be compiled, and points given as described in 5.8.2.6., thus establishing the "Partial Score B".

5.8.2.5. Task C – Speed

a) The model must past Base B either during motor run or after motor cut-off, in order to legitimate the flight.

b) This task must be completed within 4 minutes, from the order of the starter including. The model aircraft must start the task at Base A within one minute after the motor has stopped. If the one minute period expires before the model aircraft has crossed Base A for the first time, flying from Base A to Base B, then the model aircraft must be landed and re-launched within the original working time period.

c) The task consists of flying the distance starting from Base A, to Base B, and conversely, four legs in the shortest possible time.

d) The flight time is recorded to at least 1/100 sec when in flight the model aircraft first crosses Base A at the predetermined side of the safety-plane and completes four legs of the 150 metre course.

e) An audio system will inform the competitor when the model aircraft crosses the Base A or Base B (imaginary vertical planes). The absence of a signal will indicate that the model aircraft has failed to correctly cross the Base. The instruments used to check the crossing of the vertical planes must assure the parallelism of such planes. The signal is given when any part of the **complete** model aircraft **in flight** crosses the base. The source of the signal (horn, loudspeaker) must not be further than 30 metres away from the intersection of base A and the safety plane.

f) During the timed flight the competitor must stay within a distance of 10 metres either side from Base A.

g) After having completed the task, the model aircraft must land **on the defined flying site** outside the safety area(s) otherwise the flight **is zero**.

h) Model aircraft which come to rest before having completed the task will score zero.

i) During task C the timed flight shall take place to one side of the safety plane, whilst all judges/time-keepers shall remain on the other side of the safety plane. The side which is to be flown shall be indicated by the organisers taking into account the direction of the sun, etc.

The flight will be penalised with 300 points, when sighted by means of an optical aid, the safety plane is crossed by any part of the model aircraft. The instrument used to check the crossing of the vertical safety plane must also assure that the safety plane is orthogonal to Base A and Base B. The penalty of 300 points will be a deduction from the competitor's final score and shall be listed on the score sheet of the round in which the penalisation was applied.

j) After **the stop of the motor**, when the model aircraft has crossed Base A for the first time, flying in the direction from Base A to Base B, no further attempt is permitted unless the competitor signals his intention to re-launch before Base A is crossed.

k) A classification based on increasing times to complete the four 150 metre legs will be compiled, and points given as described in 5.8.2.6., thus establishing "Partial Score C".

5.8.2.6. Partial Scores

a) Partial Score for Task A for each competitor is determined as follows:

$$\text{Partial Score A} = 1000 \times P1 / Pw$$

$$P1 \leq 220 \text{ m} = \text{Flight [s]} - 0,5 \times \text{height-start altitude [m]} \text{ (see 5.8.2.3.h)}$$

$$P1 > 220 \text{ m} = \text{Flight [s]} - 3 \times \text{height-start altitude [m]} \text{ (see 5.8.2.3.h)}$$

PW = points of the winner in the related group.

b) Partial Score for Task B for each competitor is determined as follows

$$\text{Partial Score B} = 1000 \times D1/DW$$

Where D1 = distance covered by the competitor as for 5.8.2.4

DW = distance covered by the winner in the related group.

c) Partial Score for Task C for each competitor is determined as follows

$$\text{Partial Score C} = 1000 \times \text{TW}/\text{T1}$$

Where T1 = time of the competitor as for 5.8.2.5.

TW = time of the winner in the related group.

5.8.2.7. Total Score

The competitor's Total Score for each round is compiled by adding the Partial Scores of all tasks.

5.8.2.8. Classification

If only five rounds are flown, the competitor's classification is determined by the sum of all Total Scores for each round. If more than five complete rounds are flown the lowest partial score of each task with more than five results is omitted from the sum of all partial scores. To decide the winner when there is a tie, the two (or all who have the equal score) competitors will fly an additional round (three tasks).

5.8.2.9. Site

The competition must be held at a site having reasonably level terrain, with a reasonably low probability of slope or wave soaring.

Flying Field Layout

For a combined F3B / F3B-e competition the start of the F3B-e models takes place at the winch-line.

For a F3B-e competition the launch takes place at the launch-line (former winch-line); the safety area between the former winch-line and the turn-around-line can be used for landing.

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