

## Provisional Rules

### Class F3L – Radio Controlled Thermal Gliders RES

#### 5.L.1 General Rules

Known also as F3RES (Rudder, Elevator, Spoiler), F3L is a class for radio-controlled thermal soaring gliders. The models feature a maximum two (2) meter 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 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 modelers and integrate them into the sport. The rules that follow shall be understood and interpreted with this in mind.

#### 5.L.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.

#### 5.L.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 must be actuated by only one servo. Otherwise, the construction rules for conventional models described herein are applicable.

##### 5.L.3.1 The model is built mainly with wooden parts. The following methods are permitted:

- a) Wings built with ribs, either open or covered by wood sheets. "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 of 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 of wood, or with a tail boom made from fiberglass/carbon (GRP/CFRP), or Kevlar tube or profile. The tube/profile must not extend forward of the front half of the wing area.
- f) The wooden surfaces of the fuselage may be covered with fiberglass/carbon (GRP/CFRP) or Kevlar, but not more than a maximum of 1/3<sup>rd</sup> of the total area. The surface may be protected with varnish or as described in c).
- g) Hinges and control rods are exempted from the GRP/CFRP constraint.

h) The tow hook must not be larger than 5mm in frontal width and 15mm in frontal height. It may be adjustable, but not by radio. The release must not be executed by radio either.

#### **5.L.3.2 Not allowed is the use of:**

- a) Positive or negative molds for construction of the fuselage or wings or 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 5.L.3.1 h*) and surface linkages.
- c) A fuselage nose with a radius of less than 5mm.
- 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.

#### **5.L.4 Description of the Competition.**

- a) In the competition, at least four (4) qualifying rounds must be flown. For each qualifying round, competitors shall be divided into flight groups. The results of each flight group shall be normalized to arrive at comparable scores between 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 normalized scores from the qualifying rounds, will compete in a "fly-off" (minimum 2 rounds) to determine 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 meters 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 to manage the high start (*see 5.L.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 the first to start, and so on; so that hi-starts do not interfere with each other during launching.
- e) The organizer shall 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 flight times. Deviations of more than three (3) seconds in favor of the participant shall result in zero-score flight for the round.
- f) An official scorekeeper shall always measure the landing (for bonus landing points).

#### **5.L.5 The Flying Site**

- a) The competition must be held on a site having reasonably level terrain, which will minimize 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 points 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 (*for possible exceptions, see 5.L.7 d) and e)*). The attachment points for the hi-starts have the same spacing as the starting points.
- c) The landing spots are situated at least fifteen (15) meters downwind of every starting point.
- 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 5.L.11.2*)

#### **5.L.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) meters above the ground at the starting line (flight line), for at least one minute.

#### **5.L.7 Launching**

- a) Identical hi-starts shall be provided and set up by the organizer.
- b) The hi-start consists of a rubber tube of 15+/-0.2 meters length, a nylon towline of 100+/-1 meter length with a minimum diameter of 0.7mm, and an attached pennant.
- c) the pull strength of the rubber tube shall not exceed forty Newtons (4kgf) if extended to a length of 45 meters. 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 meters, must not be less than 27.5 Newtons (2.75kgf).
- d) On flying sites that will not accommodate a total hi-start distance of 150 meters, the organizer may shorten the towlines. He may make 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.

#### **5.L.8 Flights**

- a) The competitor is entitled to at least four (4) official flight flights.
- b) The competitor is entitled to an unlimited number of attempts during the working time (*see 5.L.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.

#### **5.L.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.

#### **5.L.10 Landing**

a) Before each flight each competitor will be assigned a landing spot corresponding to his assigned landing 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 ten (1) meters 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 not touching the ground.

#### **5.L.11 Scoring**

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

##### **5.L.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 first touches the ground; or
- b) Completion of the group's working time.

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

##### **5.L.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:

<b>Distance from Spot (meters)</b>	<b>Points</b>	<b>Distance from Spot (meters)</b>	<b>Points</b>
<b>0.2</b>	<b>100</b>	<b>5</b>	<b>80</b>
<b>0.4</b>	<b>99</b>	<b>6</b>	<b>75</b>
<b>0.6</b>	<b>98</b>	<b>7</b>	<b>70</b>
<b>0.8</b>	<b>97</b>	<b>8</b>	<b>65</b>
<b>1.0</b>	<b>96</b>	<b>9</b>	<b>60</b>
<b>1.2</b>	<b>95</b>	<b>10</b>	<b>55</b>
<b>1.4</b>	<b>94</b>	<b>11</b>	<b>50</b>
<b>1.6</b>	<b>93</b>	<b>12</b>	<b>45</b>
<b>1.8</b>	<b>92</b>	<b>13</b>	<b>40</b>
<b>2.0</b>	<b>91</b>	<b>14</b>	<b>35</b>
<b>3.0</b>	<b>90</b>	<b>15</b>	<b>30</b>
<b>4.0</b>	<b>85</b>	<b>over 15</b>	<b>0</b>

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

- a) The nose of the model sticks into the ground on landing, and the tail does not come to rest on the ground (*see 5.L.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 boundary specified by the organizer, unless the competitor launches his model for another attempt.
- b) The model has overflowed the group's working time by more than 30 seconds.

### **5.I.11.3 Normalized Score**

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

### **5.L.12 Final Classification**

The final ranking of the competition is determined:

- a) For competitors who have qualified for the fly-off (*see 5.L.4 a*)), by the ranking after the fly-off.
- b) For the rest of the competitors, by the ranking after the qualifying rounds.