

F3-RES Class Rules (BARCS Variant)

(Draft0.1)

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1. Introduction

This is a low technology Radio Controlled Thermal Soaring glider class. Models must be made predominantly from wood with exceptions permitted for high stress components such as spars and tail booms which may be constructed using composite materials.

Models are launched using a standard bungee providing a launch release altitude of approximately 80-90m.

2. Definitions

- a. Radio controlled glider. A model aircraft which is not provided with a drive device and its impetus and flight path is due solely on aerodynamic forces only following release from the towline. The aircraft must be controlled using a Radio Control system by the competitor while in flight.
- b. Composite materials. These are materials that utilise stranded fibres, such as Carbon, Glass or Kevlar[®] as reinforcement within a resin base
- c. Standard Model – a model aircraft consisting of Wings, Fuselage and Tail Surfaces. The tail surfaces can comprise of separate Fin and Tailplane in cruciform configuration or combined as a 'Vee' tail with mixed rudder and elevator functions. Ailerons are not permitted. A maximum of two servos can be used to control Rudder and Elevator or the Vee Tail control surfaces, one servo per moving surface.
- d. Tailless model – a model aircraft that has no discernible tail surfaces and is controlled by wing mounted elevons providing directional and pitch control. A maximum of two servos (one per wing) can be utilised for control of the elevons.
- e. Contest Director. The person with overarching responsibility for running a contest

3. Model Specifications

- a. The aircraft can be either a Standard or Tailless model
- b. The maximum projected wing span of the aircraft shall not exceed 2000mm

- c. The aircraft shall be constructed predominantly of wood.

Exceptions to the materials requirement are as follows:

- i. Composite materials may be used in the construction of Wing Spars, Wing joiner(s) and Wing Leading Edge
- ii. Composite materials may be used for a fuselage boom. If utilised, the boom must not project further forward than 50% of the wing root chord.
- iii. A single layer of composite material may be used to cover a self-supporting wooden fuselage pod for the primary purpose of providing wear resistance.
- iv. Tail and wing supports may be manufactured from composite materials
- v. Push rods and control horns may be manufactured from composite materials.

Specifically excluded are:

- i. A full composite or other plastic fuselage or an EPP or other foam core fuselage either sheathed or unsheathed with a composite material skin.
 - ii. Wing D boxes either wooden with a composite material skin or any other composite material D box
 - iii. Monocoque or moulded flying surface structures
 - iv. An EPP or other foam cored wing sheathed with a composite material skin
- d. The aircraft may be equipped with spoilers (of any size) fitted to the upper surface of the wing. These may be activated by one or two servos (one per wing) but must operate simultaneously and triggered by a single transmitter channel.
- e. The aircraft shall be equipped with one or two tow hooks with a maximum size of 5mm wide and not protruding more than 15mm below the lower surface of the fuselage at the point of attachment. The tow hook(s) can be adjustable, but not by the use of Radio Control or through any action of the tow line. With the exception of the tow hooks, the bottom of the fuselage must be smooth with no protrusion that may be used as a brake on landing.
- f. Ballast may be carried within the aircraft. It must be securely fastened and non-adjustable in flight
- g. No telemetry is permitted from the model except battery condition and received signal strength.

4. Launch Equipment

- a. The model shall be launched by a towline with bungee/rubber assistance
- b. The towline element shall not exceed 100m when tensioned with a 4kg load
- c. The bungee/rubber element shall not exceed 15m in a relaxed state and shall not exceed 45m when tensioned with a 4kg load
- d. The nominal diameter of the towline shall not be less than 0.7mm.
- e. The Contest Director (at his discretion) may elect to reduce the length of either the towline or the bungee/rubber if local conditions dictate that this is necessary.
- f. The towline shall be terminated with a ring to attach to the model. A pennant (minimum 3 dm²) or (inline) parachute shall be attached to the towline below the tow ring and is used to indicate that model has released from the tow line.

5. Competition Terrain

- a. The competition shall be conducted on a site that is relatively flat and will not unduly support wave or slope soaring
- b. The contest director will notify competitors of the boundaries of the contest field.

- c. The site shall have a start line that is arranged transverse to the wind direction.
- d. The start line shall have nominated areas for each competitor marked and spaced no closer than 8 metres apart
- e. An Attachment line – 145m upwind of and parallel to the Start line shall be marked for the secure attachment of bungee and towlines and spaced exactly the same as the competitor spacing on the start line
- f. Each competitor will be allocated a landing point, located a minimum of 10 metres downwind but adjacent to the competitors start location. The landing points shall not be spaced closer than 8m apart.
- g. The contest director has the right and at his discretion to interrupt the competition between rounds to adjust the flight line if conditions (wing strength or direction) dictate.
- h. The contest director may elect to either postpone or cancel a contest if the wind strength increases beyond 6 metres/second. This will be measured at a height of 2m above ground level and measured for a period of 1 minute.
- i. A competitor is not allowed to make radio contact with his helper(s) for the duration of the round.

6. Competition Flights

- a. A contest shall comprise of a number of rounds determined by the contest director. The minimum number of rounds for a contest shall be 4.
- b. A round shall have one or more slots of 9 minutes each. Each pilot will be allocated one slot in a round to perform a contest flight. A minimum of 4 and maximum of 8 pilots shall fly in a slot.
- c. The contest director is responsible for organising pilots into allocated slots.
- d. A round shall comprise of a combined launch window and flight 'slot' totalling 9 minutes
- e. A competitor is entitled to an unlimited number of attempts within the 9 minute slot window
- f. An official attempt is recorded when the model leaves the hand of the competitor or helper under tension of the Launch Equipment
- g. The competitor shall attempt to fly for a maximum of 6 minutes (360 seconds) and land within the 9 minute slot. Any flight longer than 6 minutes shall be capped at 360 seconds. The flight time recording will start when the model is observed to leave the towline and will cease when the model lands, disappears from sight (for a minimum of 10 seconds) or (if flying) at the end of the 9 minute slot, whichever comes first. A model that lands outside the designated contest field shall score 0.
- h. The result of the last attempt and associated flight made by a competitor will be the scoring attempt for that round.
- i. The flight score shall be 0 (zero) if the model has not landed within 30 seconds after the end of the designated slot.
- j. A Competitor is entitled to retake his flight if:
 - 1. His aircraft collides with another aircraft either during the launch or during the flight
 - 2. He is prevented from launching or landing his aircraft due to the actions of a 3rd party
 - 3. He is forced to abort his flight for reason outside his control with the exception of personal equipment malfunction.

To claim a retake of his flight, the competitor must convince either his timekeeper or the contest director that his claim is valid.

- k. Deliberate weaving while the model is attached to the towline is explicitly prohibited
- l. The contest flight will be timed when the timekeeper observes that the model has released from the towline
- m. Flights scores are scored to and recorded in whole seconds only.
- n. The results of each slot shall be normalised to a 1000 point base using standard BARCS scoring methods and the normalised score used to calculate the competitors final position.
- o. Landing. The model must land no more than 30 seconds after the end of the slot to score a landing bonus.
- p. The distance between the nose of the aircraft and the pilot designated landing point shall be measured and additional bonus points awarded as follows:

Distance in m	Points	Distance in m	Points	Distance in m	Points
0.20	100	1.80	92	9.00	60
0.40	99	2.00	91	10.00	55
0.60	98	3.00	90	11.00	50
0.80	97	4.00	85	12.00	45
1.00	96	5.00	80	13.00	40
1.20	95	6.00	75	14.00	35
1.40	94	7.00	70	15.00	30
1.60	93	8.00	65	> 15.00	0

- q. Landing bonus points shall be zero if:
 - 1. A model loses any parts on landing
 - 2. The model is no longer airworthy (minor repairs at the contest directors discretion excepted)
 - 3. The model lands 30 seconds or more after the end of the slot.
 - 4. The pilot or helper touches the model during the landing or before the official measurement has been taken

7. Final Classification and Fly-off

- a. For a contest that comprises of only 4 rounds then all normalised scores will count to the final score for a competitor
- b. For a contest that comprises of 5-8 rounds then all normalised scores except the lowest normalised score will count to the final score for a competitor
- c. For a contest that comprises of more than 8 rounds then all normalised scores except the lowest 2 normalised scores will count to the final score for a competitor
- d. The final round will comprise of a fly-off and the top scoring competitors, minimum 4, maximum of 8, based upon a selection formula of (number of competitors/4) rounded downwards. This shall be a single slot flight with an unlimited maximum duration. The model must land within the designated contest field to return a scoring entry. No landing bonus shall be awarded.