

2021 Rule Set for F5-RES (BARCS)

(unadopted)

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1. General Provisions:

- 1.1. "F5-RES" is a competition class for radio-controlled glider models with a maximum of two (2) meter projected wingspan constructed predominately of wood. Control is via elevator, rudder, and spoiler. Launch phase power is provided is by Electric Motor driven propellor.
- 1.2. Definition of a radio-controlled glider: A model aircraft that does not use any form of propulsion beyond the launch phase and depends on aerodynamic forces on fixed surfaces for lift. Models must be remotely controlled by a pilot at ground level, using a radio transmitter for control.
- 1.3. A contest comprises of a number of preliminary rounds, followed by 2 fly off rounds. For each preliminary round, contestants are divided by the contest director into groups. The result of each flight group is normalized with the highest score receiving 1000 points, and all other competitors scores being proportionately rewarded based on the aggregate of their flight and landing scores. Participants with the highest total normalized preliminary scores shall compete in a "fly off" (minimum of two rounds) to determine final standings. Fly offs will have a minimum of four, and a maximum of eight contestants, at the discretion of the Contest Director.
- 1.4. A contestant may use a maximum of two (2) models in a competition. Models may be exchanged within a round but only when the first model is returned to within 15 meters of the assigned landing target before the second model is launched.
- 1.5. A contestant may employ as many as three (3) helpers. Helpers may also be fellow contestants, and this is encouraged. A helper may launch the model, retrieve it for re-launch, inform the pilot of signs of lift, flight conditions, remaining window time or any other aspect of competitive soaring.
- 1.6. In crosswinds, the Contest Director can direct launches be made in sequence, starting from down-wind, to avoid collisions.
- 1.7. The organizers of a contest may provide official timers, or may elect to allow helpers to time flights, with periodic checks from a designated official. If any helper-recorded time deviates from a checked time by more than three (3) seconds, that flight is scored as a zero.
- 1.8. Landing points are always verified by a contest official unless the Contest Director specifically states otherwise.

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2. Model:

- 2.1. A model usually consists of wing, fuselage, and tail surfaces. Flying wing models are also allowed, if there are only two (2) movable surfaces for pitch and roll control, each with only one servo for actuation. Otherwise, construction rules apply to both model types.
- 2.2. A model must be predominately wood construction. The following construction methods are allowed:
 - 2.2.1. Open ribbed flying surfaces, solid wood surface, "D-box" wood surface, or a combination of solid wood and ribs.
 - 2.2.2. Leading edges, spars, and spar caps of composite such as carbon are allowed, which can be wound or formed of rods or extrusions.
 - 2.2.3. The surface of the wing and tails may be iron-on film or foil, silk, paper, or polyester fabric.
 - 2.2.4. The spoiler if fitted must be upper surface only, and at least 5cm forward of the trailing edge. Spoilers may be single or dual, but no more than one servo each.
 - 2.2.5. The fuselage must be wood, but a tail boom of composite material in the form of a tube is allowed. The tail boom may not extend further forward than the midpoint of the wing chord, at the wing root.
 - 2.2.6. The predominantly wooden fuselage may be covered with composite material such as fiberglass, carbon, or Kevlar for abrasion protection or local strengthening around the motor mount. Otherwise, covering is the same as for the wing and tails.
 - 2.2.7. The electric motor, battery and control electronics are at the competitor's discretion. The flat motor mounting plate may be constructed from wood, metal or a composite material.
- 2.3. The following are not allowed:
 - 2.3.1. Wings, Tail or Fuselage produced with the use of positive or negative moulding forms.
 - 2.3.2. Fixed or retractable devices to decelerate the model when landing (examples: skids, bolts, teeth).
 - 2.3.3. Nose or spinner radius may not be less than 5mm.
 - 2.3.4. Ballast that is not inside the model, and not securely attached to it.
 - 2.3.5. Any transfer of information from the model to the contestant, except for telemetry receiver signal strength, receiver temperature and receiver battery voltage. No variometers or altimeters are permitted at any time.
 - 2.3.6. Telecommunications on the flight field between competitors and helpers (radios and telephones included).
 - 2.3.7. Carbon fibre wing rib cap strips and/or Trailing edges

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3. Contest Field Layout:

- 3.1. The competition must take place on terrain that is relatively flat, that offers little chance for wave or slope flying.
- 3.2. The airfield must have a designated "start line". The start line is set perpendicular to the prevailing wind direction, and has a designated start point for each competitor. The start point for each competitor is at least eight meters from adjacent start points.
A maximum of eight (8) start points may be employed in a contest.
- 3.3. Marked landing points (one for each start point) must be at least eight meters apart, and 10 meters downwind of the start line.
- 3.4. Start points and landing points must be clearly marked. The landing distance is measured with a cord or tape from the designated landing point to the nose of the model.
- 3.5. The Contest Director will designate a landing field. Landings outside the designated landing field result in zero points for the flight. See also Section 8.5.1

4. Competition Flights

- 4.1. For an official contest, each competitor must have the opportunity to fly at least four (4) official flights.
- 4.2. A competitor is allowed an unlimited number of flight attempts within a nine (9) minute working window.
- 4.3. A flight is official if the model has left the hand of a contestant or his helper whilst under power.
- 4.4. In the case of several flights within a working window, only the result of the last flight is recorded as the official result or score.
- 4.5. The Contest Director may interrupt the competition at any time. He may do so for safety considerations, for changing launch direction in the event of crosswinds or tail winds, or if the wind velocity exceeds six (6) meters per second measured at the start line at two meters altitude for at least one (1) minute duration.

5. Re-Flights

- 5.1. A contestant is entitled to a re-flight in another working window if:
 - 5.1.1. His model collides with another, either on launch or in flight.
 - 5.1.2. Has a flight hindered or terminated by an event beyond his control.
- 5.2. To claim a re-flight in accordance with the reasons above, the contestant must land immediately, and notify the Contest Director. To continue a flight or take a re-launch indicates that the right to a re-flight is renounced.
- 5.3. The pilot(s) getting a reflight in a round, fly in a new group composed of the reflight pilot(s) and made up to a full group with other pilots chosen at random from the rest of the competitors. A pilot selected at random can decline to fly. The reflight pilots get the score they achieve on the reflight. The random pilots get the better of their existing round score and their reflight score.

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6. Launching

6.1. The flight start commences after the start of the working time with the motor running and at the point the model is launched. For aircraft that do not allow a safe start with the engine running (e.g. a flying wing with rear or pusher motor configuration), the motor must be started as soon as possible after the model is launched. The flight time begins when the motor is started.

6.2. The motor run time (30 sec) and the motor cut altitude (90m) are controlled by a suitable controller/logger (e.g. Altis V4).

6.3. The setting of the controller/logger is performed or checked by the Organiser.

The Organiser can check the controller/logger at any time after a flight. If the settings differ from the event specifications, the flight will score a ZERO.

7. Landing

7.1. Each contestant is assigned a separate and designated landing target for each of his flights. Contestants are responsible landing at the designated landing target.

7.2. During the landing approach, only the pilot and one (1) helper is allowed within a radius of ten (10) meters of the landing target. All other helpers and timers must remain at the starting position.

7.3. After landing, pilots or their helper can retrieve their models when doing so does not hinder other contestants. As a safety matter, gliders being retrieved for re-launch may not be thrown, but must be carried back for re-launch.

7.4. If the landing is to be scored, the model must not be touched until after the official landing judge has recorded the landing distance. Touching the model before then results in zero landing score.

8. Scoring Flight and Landing Performance

8.1. Timing begins when the model is released with the motor running (see also 6.1), and ends when either:

8.1.1. The model has stopped and is at rest on the ground.

or

8.1.2. At the end of the working window.

8.2. Maximum flight time allowed is six (6) minutes (or, 360 seconds) within the working window. If the flight lasts longer than six (6) minutes within the working window, the overtime is deducted from the six (6) minutes. Flight time is recorded in whole seconds, without rounding. Two (2) points are awarded for each second of flight time.

8.3. Landing distance is measured between the centre of the designated landing target and the nose of the fuselage of the model at the point of final rest. Points are awarded based on the following table:

Distance in meters	Points	Distance in meters	Points	Distance in meters	Points
0.2	100	1.8	92	9	60
0.4	99	2.0	91	10	55
0.6	98	3.0	90	11	50
0.8	97	4.0	85	12	45

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1.0	96	5.0	80	13	40
1.2	95	6.0	75	14	35
1.4	94	7.0	70	15	30
1.6	93	8.0	65	>15	0

8.4. A pilot receives zero points for landing if any of the following apply:

8.4.1. The model is embedded in the ground or is upside down.

8.4.2. The model loses one or more parts upon landing.

8.4.3. The model is no longer capable of flight.

8.4.4. The model has not landed by the end of the working window.

8.4.5. The model touches the pilot, his helper, or any other human during the landing approach.

8.4.6. The model is touched by the pilot or his helper before the landing judge has recorded a landing measurement.

8.5. The entire task receives zero points for both flight time and landing if:

8.5.1. The model lands outside the designated landing field.

8.5.2. The model has not landed within 30 seconds of the end of the working window.

8.6. Total flight score is a sum of: two (2) points per each second of flight time, up to six (6) minutes or 360 seconds, minus two (2) points for each second of flight after six minutes, plus the number of landing points as determined in the Table in section 8.3 above.

9. Final Score

9.1. The contestant receives two (2) points for every second flown, up to six (6) minutes, for a maximum of 720 time points.

9.2. For every second over six (6) minutes flown, two points are deducted from the maximum of 720 time points.

9.3. Landing points are awarded according to the table in 8.3 above and added to the time points.

9.4. The total points (time and landing) are then normalized against the highest total points, in each flight group. The highest total points are assigned a value of 1000 points, and lower scores are assigned values proportionate to the highest total points in a group.

9.5. At the end of the final preliminary round, all scores are added, and the contestants ranked accordingly. The highest-ranking contestants may then participate in a minimum of two (2) fly off rounds to determine final contest standings. The Contest Director, before the contest starts, announces how many of the highest ranking pilots may fly in the fly off, selecting any number from four (minimum) to eight (maximum).

9.6. The fly off is conducted as a new “mini-contest”, with all fly-off contestants starting with zero scores.

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