



Royal Aero Club Records, Racing and Rally Association

General Rules for Air Racing Issue 2.1

Royal Aero Club Records, Racing and Rally Association

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Errors or amendments to these rules should be notified to secretary@royalaeroclubrrra.co.uk

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Amendment Log

Issue	Description	Date
1.0	First of new format	01/01/21
1.1	Incorporation of committee comments, correction of spelling, grammar and syntax errors	21/02/21
1.2	Minor amendments following lessons learnt in 2021	27/03/22
1.3	Correct minimum speed	11/04/22
2.0	Updates for changes to handicapping software and split out general rules, pursuit rules and time trial rules	07/01/24
2.1	Amendments to section 30 as required by committee and correction of auto-numbering error.	13/06/24

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PART A - GENERAL

RULES FOR SAFETY

1. Minimum heights

Minimum heights shall be set by the officials of the meeting as required and this information shall be provided in the written brief. The minimum heights set by the officials shall not be less than the following or any height stated on relevant permissions/exemptions granted by the Civil Aviation Authority ('CAA'), whichever is the higher.

- 1.1 For a pursuit race format between TP1 and "Point Alpha" – 550ft
- 1.2 For the finish area of a pursuit race format (Point Alpha to Finish) – 50ft
- 1.3 For time trial formats not exceeding 5 miles per lap – 75ft subject to local risk assessment

2. Limitations for courses

- 2.1 The airfield turn and the lateral limit of the finish line shall be sited no less than 150m from any public area on the airfield unless otherwise specified by the CAA.
- 2.2 The first scatter point shall be sited not less than 1km from the start line.
- 2.3 Scatter points shall be sited such that the angle of the turn is not more than 60 degrees unless local geographical constraints require it to be greater in the interests of safety so long as the turn can be executed safely by any aircraft meeting the minimum performance requirements of these rules. The turn angle for right hand scatters is limited to 45 degrees.
- 2.4 The minimum permissible length of take-off run available from the start line is 500m. This may preclude the participation of certain low-performance aircraft. Officials must assess the capabilities of each aircraft entering the race in collaboration with the pilot to ensure that it can safely take-off and land at the selected airfield prior to the event.

3. Weather minima

- 3.1 The minimum permissible visibility is 5km.
- 3.2 The minimum permissible cloud base is 300 feet above the sum of the highest point on the course and the minimum race height above ground level.
- 3.3 No practice or racing shall take place within 5km of electrically active storm clouds or areas of known extreme turbulence, windshear, downdraughts or microbursts.
- 3.4 No practice or racing shall take place in heavy precipitation or severe icing conditions.
- 3.5 Officials shall assess the weather conditions prior to the race and cancel or postpone the race if necessary. It is the ultimate responsibility of the pilots to ensure that the weather is not worse than their own personal limits prior to departure and withdraw from the race if necessary.

4. Race practice and scatter practice

- 4.1 Pilots competing in a race must have completed at least one full practice lap during the race practice period.
- 4.2 Where applicable, pilots competing in a race must have practiced the scatter(s) in the exact configuration that the aircraft would be in for the start of the race. I.e. slow, gear down, etc. This will require a touch-and-go to be performed. If there are any changes to the positions of the scatters or a change of runway in use, a further practice period will be required.

5. Pilot requirements

In the interests of safety, pilots entering a race must;

- 5.1 Have logged a minimum of 100hrs as pilot in command of aeroplanes meeting the requirements of the type or class rating applicable to the aircraft being entered into the race.
- 5.2 Have successfully applied for and been issued an FAI racing licence.
- 5.3 Have successfully completed a handicapped air race organised by the RAeC RRRA without exclusion or disqualification for an endorsable offence within the previous 5 years OR have successfully been assessed for competence in a race environment in accordance with the safety requirements of the operations manual which the committee may vary from time to time.

6. Carriage of passengers

Competing aircraft may not carry more than one passenger who will act as a navigator and lookout. The passenger need not be qualified to pilot the aircraft unless it is a requirement of the pilot's licence, rating or medical to have a second pilot on board. Passengers must be of an age and level of responsibility that they can act as a functional member of the crew. In the case of children, they must be approved by the officials as safe to participate. Carriage of children under the age of 10 is not permitted.

7. Aircraft requirements

- 7.1 Aircraft must be able to take-off safely at race weight within the take-off run available at the event location with an assumed ambient temperature of 30 degrees Celsius.
- 7.2 Aircraft may not carry oxygen or oxygen producing agents such as nitrous oxide. Where aircraft are fitted with oxygen generating equipment or storage which cannot be removed, said equipment should be depleted and disabled for the duration of the race.
- 7.3 Aircraft must have adequate visibility to the front and sides.

8. Drugs and alcohol

- 8.1 Competitors must comply with the Air Navigation Order in respect of blood and breath alcohol limits and are reminded that the limits are substantially lower than the requirements of the Road Traffic Act for operation of a motor vehicle. The consumption of alcohol is exempted from the requirements of rule 7.3. Any person who acts or attempts to act as a pilot or passenger during the course of an air racing event whilst, in the opinion of two or more officials, he is clearly under the influence of alcohol will be immediately excluded and disqualified from the event. That person may, at the discretion of the committee be subject to a lifetime ban from the Association and have their FAI licence revoked.
- 8.2 The use of prescription or the over-the-counter medication is permitted in accordance with CAA medical guidelines. Any person who's capacity to operate an aircraft safely is, in the opinion of two or more officials, clearly diminished by such medication will be disqualified and excluded from the event.
- 8.3 The use of unlawful recreational drugs and psychoactive substances by members of the Association is strictly prohibited. Any person found to be in possession of or have consumed such substances at or within 72 hours of an Air Racing event that they are attending or at any time in such a way that could cause reputational damage to the Association will receive a mandatory lifetime ban from RAeC RRRA organised events and will have their FAI licence revoked. Competitors must also comply with the FAI anti-doping policy.

9. Operation of aircraft

The pilot in command of an aircraft is strictly responsible for the safe conduct of the flight. Compliance with the direction of an air traffic controller, AFISO, air/ground radio operator or an RAeC RRRRA official is at the discretion of the pilot in command and does not in any way transfer the strict liability of the pilot to the RAeC RRRRA. However, if the pilot in command fails to comply with the reasonable direction of an RAeC RRRRA official without reasonable excuse, he may be liable to penalty in accordance with these rules.

10. Airside personnel

- 10.1 Only essential race officials, pilots and navigators are permitted to access the airside parts of the airfield during practice or race periods.
- 10.2 Pilots are responsible for their passengers, crew and guests. If any person not permitted to be airside is found to be on the airside, the pilot with whom they are associated may be liable to penalty in accordance with these rules.
- 10.3 Race officials manning the start line must not stand in line with the aircraft's propeller at any time and may only stand forward of it for the purposes of marshalling or providing a start signal.

11. Postponement, abandonment or cancellation

Race officials may postpone, abandon or cancel a race at any time should a valid safety reason exist for doing so.

11A. PPE and clothing

11A.1 For safety, polyester clothing should be avoided. 100% cotton is preferred. The use of nomex flying suits or racing overalls is encouraged. Clothing should full cover arms, legs and feet. Shorts, flip-flops, sandals etc are prohibited.

11A.2 In races where flight over water is required, life jackets shall be mandatory.

ADMINISTRATION AND ORGANISATION

12. Interpretation

- 12.1 Race officials shall interpret and enforce these rules to the best of their ability and in good faith.
- 12.2 The Royal Aero Club and the FAI shall be empowered to determine these rules in accordance with the requirements of these rules for protests and appeals.
- 12.3 All references to the masculine shall include the feminine and other pronouns.

13. Announcements

Races shall be formally announced by email no later than 14 days prior to the event at which point entries are invited. The announcement shall include any supplementary regulations that shall apply to the event that are either in addition to these rules or vary these rules. Supplementary rules may not vary rules for safety. Where the officials do not comply with this requirement, the deadline for entries shall be 1700hrs the day before the first day of the event. If the date of the event without the official notice has been published more than 21 days ahead of the event then insufficient notice shall not be grounds for objection. However, if the requirement is not met and any member issues a valid objection then the event must not be held.

14. Entry submissions

- 14.1 Entries must be submitted in the form specified in the invitation. Where no means is specified, entries shall be submitted to the aviation secretary in any form.
- 14.2 Where submitted by post, the entry must be dispatched at a time where the entry should reasonably be received by the deadline.
- 14.3 Entries will only be accepted if they are submitted by or on behalf of a fully paid up pilot member who has no outstanding debt to the association.

15. Entry fees

The entry fee determined by the committee and included in the announcement must be received into the RAeC RRRRA account for the entry to be considered and in any case must be received before the deadline for entries.

16. Refusal of entries

If an entry is refused for any reason, the competitor must be notified no later than 6 days prior to the event by an effective means and must state the reason(s) why his entry has been refused. Protests against a refusal must be received by the Chief Steward no later than 5 days prior to the event.

17. Late entries

Late entries may be considered at the discretion of the Clerk of the Course and the Chief Handicapper and may be subject to a late entry fee of £30.

18. Limitation of numbers

- 18.1 The RAeC RRRRA may limit the number of entrants in any given race and must state the maximum number in the supplementary regulations.
- 18.2 Where the number of entries exceeds the maximum number, entries shall be taken on a first come first serve basis.

19. Officials

The committee shall cause at least the following key officials to be appointed for each and every race:

- 19.1 A Clerk of the Course
- 19.2 A Chief Handicapper
- 19.3 A Chief Steward

The handicapper may, with the agreement of the committee, participate in the race. The Clerk of the Course and Chief Steward must always remain on the ground.

20. Powers of the officials

The Chief Steward is empowered to endorse a competitors FAI racing licence for dangerous or unsportsmanlike conduct and is empowered to determine protests on behalf of the RAeC RRA.

21. Registration

All racing pilots and navigators must have completed their registration in person by the deadline. Late registrations may be considered at the sole discretion of the Clerk of the Course and the Chief Handicapper.

22. Attendance at briefings

Prompt attendance at all briefings is mandatory. Failure of a pilot or navigator to attend a briefing on time and for its full duration will result in that person being excluded from the practice or race.

23. Expenses

Only certain designated officials may claim reasonable expenses incurred in connection with the event in accordance with the associations expenses policy in force at the time of the event.

24. Supplementary regulations

Any supplementary regulations published with the official event notice should be read as if they were part of these rules.

25. Insurance

The competitor undertakes to insure him/herself, his/her pilot(s) (if not the same person), crew/passengers, representatives and employees, against all damages, claims and demands whatsoever in connection with all Air Racing for a minimum of third party liability to at least the minimum value of mandatory insurance required under EC regulation EC785/2004 or as amended and this cover must hold harmless the Royal Aero Club Records, Racing and Rally Association Ltd by stating the following:

I. The Royal Aero Club Records Racing and Rally Association, its Directors, Officials and Agents are included herein as Additional Joint Assureds.

II. It is hereby noted and agreed that Royal Aero Club Records Racing and Rally Association approved check pilots and supervisors are included as passengers under the passenger legal liability section of this policy when being carried for the purpose of training or checking a permitted pilot.

III. Insurers agree to hold harmless and waive rights of subrogation against The Royal Aero Club Records Racing and Rally Association, its Directors, Officials and Agents

IV. It is noted that this policy carries a combined single limit for liability to third parties and passengers

26. Postponement and abandonment

The officials may postpone or abandon a race or practice for any operational reason deemed necessary including but not limited to poor weather or insufficient entries.

27. Event Format

The format of the race may vary from time to time and will be published by the officials prior to the event. The formats currently approved under these rules are pursuit and single aircraft time trial. The rules for each of these formats are found in parts B and C of these rules.

27A. Timings

Unless otherwise specified in the formal event notice and briefing, weekend timings shall be as follows:

Saturday

Check in closure	1030hrs
Practice briefing	1100hrs
Practice period	1200hrs – 1300hrs
Race briefing	1400hrs
Race	1500hrs

Sunday

Check in closure (if not attending on Saturday)	0900hrs
Practice briefing	0930hrs
Practice period	1000hrs – 1100hrs
Race briefing	1115hrs
Race	1200hrs
Debrief	1400hrs

AIRCRAFT REQUIREMENTS

28. Identification

- 28.1 Competing aircraft must display identification numbers assigned to them by the RAeC RRRA. The numbers must be not less than 11 inches high and displayed on both sides of the vertical stabiliser and on the underside of the lowest port wing with the base of the numbers as close to the wing tip as reasonably practicable. The numbers must be of a colour that is in distinct contrast to the background.
- 28.2 Numbers allocated by the RAeC RRRA must be greater than two and less than one thousand. Pilots may request a preferred race number which should be issued to them unless it is already taken by an active pilot member. Numbers are allocated to pilot members rather than aircraft unless there are multiple pilot members sharing one aircraft in which case the number shall remain with the aircraft.
- 28.3 Numbers shall only be reserved whilst the pilot is a paid up pilot or full member of the association and for 12 months after that person ceases to be a paid up pilot or full member.
- 28.4 The race number 1 is reserved for the current British Air Racing Champion who may utilise the number if he so wishes.
- 28.5 The race number 2 is reserved for the current Total Points Champion who may utilise the number if he so wishes.

29. Minimum speed

Competing aircraft must be capable of flying at speeds in excess of 86 knots (100mph) true airspeed in its race power configuration. All assigned handicap speeds must exceed 86 knots.

30. Throttle & RPM stops and other limitations of power

- 30.1 Any competitor wishing to race an aircraft at less than full power and/or maximum RPM must contact the committee, discuss their requirements and seek dispensation. The pilot requesting this dispensation must do so a minimum of 21 days before the race meeting. The aircraft, fitted with the proposed solution, shall be presented at an agreed airfield at a time and date at least 7 days prior to the race meeting, for inspection by an inspector appointed by the committee. The inspector will report his findings to the committee. The use of such devices in a race will only be permitted with the express approval of the RAeC RRRA committee. Any permanent modifications to the aircraft must be approved by the relevant regulator.
- 30.2 The use of video recording as a means of evidencing throttle and RPM positions is not acceptable.
- 30.3 The committee may make additional rules under this section at any time and such changes will be notified to the membership as soon as practicable.

31. Fuel level

- 31.1 Competitors must declare a starting and finishing fuel level and must ensure that it is complied with. The declared starting fuel level must be within 10% of the last declared fuel level.
- 31.2 The aircraft's actual fuel level must be within 10% of its declared starting fuel level.
- 31.3 The aircraft's finishing fuel level must be such that it can fly for an additional 30 minutes at a cruise power setting.

32. Configuration changes

- 32.1 Configuration changes that have taken place since the last time the aircraft raced must be declared.
- 32.2 Where configuration changes have taken place, the aircraft may be subject to pre or post race adjustment at the discretion of the handicapper.

33. Legality

The aircraft must be legally airworthy and all necessary certificates and documentation must be valid and in place. Pilots must produce any aircraft documentation on the request of the officials.

34. Overall condition

Aircraft participating in an air race must be and appear to be in good condition in the interests of maintaining the reputation of the Association. Aircraft not meeting this requirement may be excluded at the discretion of the officials.

HANDICAPPING & COURSES

35. Assumptions and conversion factors

Assumptions and conversion factors used in handicapping are to be as follows:

- The radius of the earth is 6371km
- There are 1.852km in a nautical mile
- Specific gas constant for dry air is 287.058J/kg/K
- Specific gas constant for water vapour is 461.495J/kg/K
- All turns are carried out at 60 degrees of bank/2g
- 1 foot is equal to 0.000164579 nautical miles
- 1 kph is equal to 0.539957knots

International standard atmosphere: The international standard atmosphere shall be used for standardising aircraft performance data. For the purposes of these rules, the international standard atmosphere is as follows and the figures below are at mean sea level:

Pressure:	1013.25 hPa
Temperature:	15 deg celcius
Lapse rate (T):	1.98 deg celcius per 1000ft
Lapse rate (P):	1hPa per 30ft
Base density:	1.225kg/m ² (dry air)

36. Formulae

There are a number of complex calculations that are required to determine the handicap speed of an aircraft including but not limited to:

- Determining the distance between two latitude & longitude co-ordinates
- Determining the extra distance travelled according to the radius of each individual turn
- Determining the acceleration performance of an aircraft
- Converting between true airspeed and equivalent air speed
- Converting between ground speed and true airspeed taking into account wind vectors
- Mean average of historic speed
- Determining conditions at race height with reference to conditions at sea level
- Speed/Distance/Time

All the above shall be calculated using internationally recognised and widely accepted formulae and the standard values defined in these rules. Precedence shall be given to formulae adopted by ICAO, the FAA or the CAA. The handicapper may use alternative formulae for any given season but may not change formulae mid-season unless said formulae are proven to be mathematically incorrect in which case an immediate adjustment shall be made, and the details of the change published to all racers. If the handicapper uses a new formula, he must check the formula with test values and/or known historic data to check it for errors.

All averages shall be mean unless otherwise stated and may exclude outlying results.

All airspeed conversion calculations shall attempt to factor in actual pressure, temperature and air density at race height.

The handicapper may, subject to the agreement of the committee, use developed formulae for determining a handicap speed if it is considered to improve the accuracy of the estimate. This will be set based on historic race data collected by the handicapper from officially provided GPS. For any given season this will be fixed at the beginning of the season and may not change mid-season

unless said formulae is proven to be mathematically incorrect in which case an immediate adjustment shall be made and the details of the change published to all racers.

The following formulae will be adopted to account for temperature impacts on engine performance:

Corrected EAS (into the average) = $EAS / (1 - ((X1 * \text{Temp at race height}) - X2))$

Handicap EAS (out of the average) = $\text{Average Corrected EAS} * (1 - ((X1 * \text{Temp at race height}) - X2))$

Where;

Normally aspirated engines:

X1 = 0.002113

X2 = 0.029353

FADEC turbo diesel and turbo/supercharged engines:

X1 = 0.001958

X2 = 0.019465

37. Units of measurement

All official distances shall be in nautical miles and all official speeds in knots. All times shall be published in hours minutes and seconds.

38. Use of historic data

The handicapper will use historic data combined with weather data to determine the handicap speed of the competing aircraft. Up to 6 previous races will be included in the calculation where sufficient data is available. The handicapper may, at his discretion, exclude data from the calculation if they believe it may unreasonably skew the result.

39. Use of weather data

The handicapper will attempt to use the most accurate weather data available to him to determine external race parameters e.g. wind, temperature, pressure. Acceptable data sources are; the airfield's weather station, met office forecast data, an octagon, a practice lap or some combination of these data sources. It is for the handicapper to determine which data is most likely to be the most accurate for the day's conditions.

40. New aircraft

When a new aircraft enters a competition for which there is no historic handicap data it will be necessary to assign speed allowances to that aircraft. Where no such similar data exists, the aircraft will be required to fly a series of manoeuvres at specific height and power settings as dictated by the handicapper which must be supervised if possible. The handicapper may request this at any time where he has reasonable grounds to suspect that the aircraft's historic data may not be valid.

41. Determination of race speeds

The race handicap speed shall be determined by historic data and/or initial aircraft data established through a means described in these rules. Historic data must be stored as or converted to temperature corrected equivalent airspeed for the purposes of calculating handicap speeds. On each race day, the equivalent handicap speed must be converted into true airspeed in

order to determine the time an aircraft will take to fly a perfect course, factoring in wind vectors. If a racer believes their handicap speed is incorrect, they may request to see the details of the calculation from which it is derived. The handicapper may take new information into account and re-calculate the handicap speed if they feel sufficient evidence is presented.

42. Determination of expected race time

The expected race time is determined by the handicapping software through a series of complex calculations. By entering the race, the competitors accept the determination of the software is final. Additionally, the expected race time may be adjusted post-race after analysis of the data provided.

43. Publication of turn points

The final course with approximate turn point locations is to be published at the earliest opportunity but no later than during the briefing for the first practice. This will be the final and definitive course for subsequent races (save for runway changes). The final published turn point locations should be within 50m of the actual turn point location. Racers should not rely on the published turn point location during the race as the actual position of the turn point marker will be used for assessing the race results.

44. Timekeeping

The official race time shall be as kept by the timekeeper using the 3R's time keeping devices (Seiko electronic stopwatches) and/or the handicapping software. These shall be used to log the start and finish times of each racer. These times shall be used to determine the final finishing order. Where a time cannot be provided from these devices for some reason then the time as determined by the GPS's may be used at the handicappers discretion.

45. Delayed starts

Where it is necessary to delay the start of one or more racers for some reason, the timekeeper will record the delay and inform the handicapper of the scale of the delay. They will attempt to manage the delay to a whole number of seconds, with a multiple of 10. The delay will be deducted from the racers finishing time.

46. Discarding of octagon and other data

The handicapper may discard historic data for the determination of future race speeds and times where he believe is may be inaccurate.

47. Valid GPS data

It is the pilot's responsibility to ensure that valid GPS data is provided in accordance with these rules. The GPS(s) must be placed in such a location that they will receive a constant signal and will not become shielded. Typically this would be on the right side of the windscreen. If it is not possible to obtain sufficient GPS data then the racer will be disqualified.

47A. At the time of writing, the club provides GPS's for the purpose of complying with these rules. The BadElf Pro+ GPS's currently in use by the club are now obsolete and cannot be replaced. At any point in the future with reasonable notice, the committee may decide to require competitors to provide their own GPS(s). Should this happen, the competitor may choose the number of GPS that they operate in the cockpit for resilience. The GPS data provided must be directly from a type that;

46A.1 Meets the specification requirements of these rules; and

46A.2 Is approved by the handicapper for use.

It is not permissible to provide data that has been processed by 3rd party software such as SkyDemon or other EFB's. The data must be recorded directly on to the device and then passed directed from the device to the handicapper.

47B. In order to be approved for use, GPS must meet the following requirements:

- 46B.1 Be capable of recording tracks directly to its own memory;
- 46B.2 Be capable of providing the recorded data in either .GPX or .KML format;
- 46B.3 Have not less than 66 channels;
- 46B.4 Be able to access at least GPS and GLONASS satellite systems;
- 46B.5 Be capable of utilising at least WAAS and EGNOS for enhanced accuracy;
- 46B.6 Have a published accuracy of not more than 2.5m.

47C. The following types have been tested and are approved for use:

- 46C.1 BadElf Pro+ (preferred due to enhanced data provision)
- 46C.2 Dual Electronics SkyPro XGPS160
- 46C.3 Garmin eTrex SE

48. Marking of courses

The turn points should be marked by a clear and distinct feature with a defined point or by an official RRRRA orange marker tent. Markers should be placed in a position that is clearly visible on approach to the turn point and not hidden behind trees or hedge rows.

49. Turning points

The RAeC RRRRA GPS unit inside each aircraft must pass to the right of each and every turn point unless otherwise stated in the briefing. It may occasionally be necessary for a scatter point to be designated as a right hand turn in which case the GPS unit must pass to the left of the scatter point. The GPS must be located inside the aircraft's cockpit area.

GENERAL PENALTIES

50. Over/under weight

Aircraft must be within 10% of their declared starting and finishing weight at those respective times and the stewards may weigh entrants at any time during the season without notice. The handicapper may award penalties for minor infringements and a disqualification for a major infringement. A minor infringement shall be 10-15%. A major infringement shall be greater than 15%. The penalty for a minor infringement shall be 10 seconds.

51. False declarations

Where a racer is found to have made a false declaration on their entry form e.g. failing to declare a modification to the engine, they shall be disqualified.

52. Failing to comply with height restrictions

52.1 Any competitor who flies lower than the minimum stated height at any point during the race by an amount not exceeding 50ft shall be subject to further action as follows (where only 1 strike is issued per race):

- Strike 1 – 1 second time penalty
- Strike 2 – 2 second time penalty
- Strike 3 – Disqualification

After disqualification for 3 strikes, the count resets.

52.2 Any competitor who flies below the minimum stated height at any point during the race by an amount exceeding 50ft shall be disqualified immediately. GPS altitude collected from GPS shall be used for determining low flying and is the only official source of height data.

56 Cuts

56.2 A cut is when the GPS passes inside the turn point by a distance of not more than 10m as defined by a circle centred on the turn point.

56.3 Where the GPS trace passes inside the turn point by a distance not exceeding 3m, no action shall be taken.

56.4 Where a GPS trace passes inside the turn point by a distance of more than 3m but less than 10m, a time penalty of 3 seconds shall be awarded. The Handicapper has discretion to judge the marginal cases.

57 Misses

Where a GPS trace passes inside the turn point by a distance exceeding 10m, the racer shall be disqualified. The handicapper has discretion to judge the marginal cases.

58 Excess/Inadequate speed

Where a competitor's race speed differs from their handicap speed the software will make appropriate adjustments to the competitors finishing time, taking into account actual speed and any allowances permitted in certain phases of the race.

59 Breach of other rules

Where a competitor breaches these rules and there is no prescribed penalty for doing so, the Chief Steward may impose a reasonable penalty at his discretion. The Handicapper may make recommendations to the Chief Steward in this respect.

70 Fines

The Stewards of the meeting may inflict a fine on any competitor, passenger or assistant who does not comply with the FAI Sporting Code, these rules, the Supplementary Regulations or instructions delivered in a formal briefing. The amount of the fine is to be reasonably determined by the Stewards but may not in any case exceed £175.

Fines must be paid within 48hrs of them being ordered. Any delay beyond this may result in suspension of the competitor until the fine is paid.

71 Exclusion

The Stewards of the meeting may exclude a competitor from one or more races held at any given meeting for breach of these rules, unsportsmanlike conduct and/or dangerous flying. In the case of exclusion, any entry fees already paid shall be forfeited.

72 Disqualification

The Clerk of the Course or the Chief Handicapper may disqualify a competitor from any competition in accordance with these rules.

73 Suspension

In the case of serious breaches of these rules or dangerous flying, the directors of the RAeC RRRRA may suspend a competitor's racing licence. Whilst suspended, the competitor may not take part, in any capacity whatsoever, in any competition held within any territory under the jurisdiction of the RAeC or within any territory in which the authority of the FAI is recognised according to whether the suspension is issued on a national or international basis. Suspension shall void any entries made for subsequent events and any fees paid are forfeited.

RESULTS

74 Dead Heats

- 61.1 In the event of a dead heat in a single air race, the result shall be determined by excess distance whereby the competitor with the shortest excess distance shall be awarded the highest place.
- 61.2 In the event of a dead heat in a points based competition, the winner shall be determined by the highest number of first places in the races that qualify for that competition. If a dead heat still results then it will be determined by the number of second places, then third places and so on until a winner is determined.

75 Provisional results

The provisional results should be published as soon as possible after the race and should include the following information as a minimum:

- Final position
- Excess distance
- Actual race time
- Cuts, misses, time penalties etc
- Close start adjustments

Provisional results must be checked and signed off by the Clerk of the Course and/or Chief Steward before they are posted.

76 Final results

Provisional results shall be subject to a protest period of 30 minutes from the time that they are formally posted. If no protest is received in that 30 minute period then the results shall be declared as final. If a protest is received, heard and determined by the Stewards and it subsequently alters the results, the new results shall be posted for a further 30 minutes before they can be declared as final and so on until all protests are determined. When a protest is determined but the results are unaltered, a period of 30 minutes must be allowed for appeals prior to finalising the provisional results.

77 Publication of results

Results should be published as soon as is practicable after completion of the race and analysis of GPS data. Results must be posted in a prominent location and all reasonable efforts must be made to notify competitors that the results have been published.

78 Suspension of results

In the event that a competitor wishes to appeal the determination of the Stewards or a protest cannot reasonably be heard on the day of the race, the results of that race may be suspended until the outcome of the appeal is known. The results should be publicised as soon as the protest or appeal is closed and the awards be presented at the next RAeC RRRA event.

PROTESTS

79 Right to protest

A competitor who feels aggrieved by any decision of an Official or any act or omission of a competitor or other person connected with the relevant competition shall be entitled to protest under these rules.

80 Time limit for protest

A protest as to the validity of an entry, qualification of a competitor or aircraft, length of the course or make up of the handicap must be lodged no later than 1 hour before race briefing. Where this is impractical due to timings, it shall be lodged within 30 minutes of the conclusion of the competition.

Any other protest must be received within 30 minutes of publication of the results of the relevant competition. Any protests received after this period will not be admitted and will not alter the result of that competition.

81 Lodgement of a protest and protest fee

A protest must be made in writing on an RAeC RRRRA protest form and be signed by the competitor. It must clearly state the reason for the protest and reference any relevant rule(s). A protest fee of £30 must be lodged with the Stewards of the meeting. If the protest is upheld or found to be well founded, the protest fee will be refunded to the competitor.

82 Adjudication of protest

All protests are adjudicated and determined by the Stewards of the meeting. Where the Stewards cannot reach an agreement, the Chief Steward shall have the deciding vote. The decision of the Stewards is subject to the competitors right to appeal.

70. Malicious or vexatious protests and protests without foundation

Where a protest is deemed by the Stewards to be malicious, vexatious or without foundation, the protest fee is forfeited and the Stewards may inflict additional penalties on the protester.

73 Re-run

In the event that a mistake is made by an Official which materially alters the result of the competition and the mistake cannot be rectified without a re-run then the Stewards may order a re-run of the competition.

APPEALS

74 Right to appeal

- 72.1 Every competitor shall have the right of appeal against a sentence or decision pronounced by the Stewards of the meeting. However, the competitor must notify the Chief Steward in writing within 30 minutes of having been advised of the decision or within 30 minutes of the re-posting of the results, whichever is the later. Failure to make this notification will result in the competitor forfeiting his right to appeal.
- 72.2 The full details of the appeal must be received by a director of the RAeC RRRRA within 7 days of midnight following the conclusion of the competition. If no such detail is received, the competitor shall forfeit his right to appeal and may, at the discretion of the RAeC RRRRA be fined for wasting the clubs time.

73 Hearing by the RAeC RRRRA

- 73.1 In the first instance, all appeals will be heard by the directors of the RAeC RRRRA in a meeting of the directors held in accordance with the articles of association which must take place within 7 days of the appeal having been received. A majority verdict should be reached and the judgement received by the competitor within 3 days of that meeting.
- 73.2 If the competitor is not satisfied with the judgement received, notification of his intention to escalate the appeal must be received by a director within 3 days of having received the judgement. Failure to do so will result in the competitor forfeiting his right to any further appeal.
- 73.3 Having notified a director of his intention to escalate his appeal, the competitor must issue his appeal to the Royal Aero Club within 7 days of having received the judgement of the directors of the RAeC RRRRA. Failure to do so will result in the competitor forfeiting his right to any further appeal.

84 Jurisdiction of the Royal Aero Club as to appeals

Where an appeal is received by the Royal Aero Club in accordance with these rules, the Royal Aero Club shall determine how that appeal is to be heard and the timescales for reaching a judgement.

The Royal Aero Club is empowered to settle any dispute arising out of or in connection with sport aviation within its territory and its decision shall be final.

85 Jurisdiction of the F.A.I as to appeals

The FAI shall be the final court of judgement empowered to settle any dispute arising between National Aero Clubs.

86 No appeal outside of own country

When an appeal is lodged with the Royal Aero Club arising from a national event by the holder of an FAI licence issued by the RAeC RRRRA, the decision of the RAeC shall be final.

87 Appeal other than by a holder of an FAI license issued by the RAeC

Where an appeal concerns a competitor who has been licensed by a foreign National Aero Club, the decision as to whether the appeal should be heard by the FAI is that of the foreign National

Aero Club alone and that club is not compelled to give reasons for refusing to allow an appeal to go on.

88 Appeals against international suspension or disqualification

When an appeal is brought by the RAeC before the FAI concerning the international suspension or disqualification of one of its licence holders by a foreign National Aero Club, the introduction of said appeal will suspend the penalty until a final decision by the FAI has been given.

89 Form of national appeal

A national appeal to the RAeC RRRRA shall be in writing by the appellant and must be accompanied by a non-refundable fee of £100. The fee must be cleared by the deadline for receipt of the appeal in order for the appeal to be valid.

90 Form of international appeal

International appeals may only be lodged by the RAeC. Any fee's payable to the FAI for an international appeal are payable by the appellant.

CHAMPIONSHIPS AND TROPHIES

91 Inclusion in championships and trophies

- 81.1 Only citizens of the United Kingdom of Great Britain and Northern Ireland or Commonwealth countries are eligible to compete for the Kings Cup. Foreign nationals may participate in the race and may receive championship points commensurate with their finishing position but may not receive an award for their finishing position in that competition. Awards shall be assigned as if that person had been disqualified from the race.
- 81.2 Only citizens of the United Kingdom of Great Britain and Northern Ireland, Commonwealth countries or foreign nationals habitually resident in the United Kingdom of Great Britain and Northern Ireland may compete for any of the championship trophies awarded for participation in national competitions.

92 The points system

82.1 Each pilot, navigator and aircraft will be awarded points for their final result according to this table:

Position	Points	Position	Points
1 st	25	6 th	8
2 nd	18	7 th	6
3 rd	15	8 th	4
4 th	12	9 th	2
5 th	10	10 th	1

No points shall be awarded to racers who are disqualified, finish 11th or higher or do not finish the race. Points shall be awarded to those retiring due to a mechanical defect in the order in which they retire. The defect must be observed and confirmed by the race officials.

82.2 The British Air Racing and Navigators Championships are awarded based on a racers best N results, where Q is the number of races achieved in the season and N is as follows:

- Where $Q \geq 9$, N is $Q - 2$
- Where $3 < Q < 9$, N = $Q - 1$
- Where $Q \leq 3$, N = Q

93 The British Air Racing Championship

Shall be awarded to the pilot with the highest number of points after accruing their N best results.

84A The Excess Distance Trophy

Is awarded to the person with the lowest average excess distance calculated in accordance with these rules.

84A.1 Must have completed X qualifying races where X is the number of successful races in the season minus 2, without disqualification for dangerous flying and with valid GPS data. Where the competitor provides valid GPS data but the software is unable to analyse the true excess distance, the race shall count for qualification purposes but not be included in the average.

84A.2 Where the pilot completes more than X races (excluding errors described above) then they may drop their worst excess distances such that the number included in the calculation is X.

84A.3 If a racer is disqualified for a miss (within reason and at the discretion of the handicapper) the excess distance shall still count.

84A.4 The excess distance for each race shall be “normalised” to a 20 turn race by dividing the excess distance by the actual number of turns and then multiplying by 20. The number of turns does not include scatter points.

84A.5 The trophy is to be engraved with the year, competitor name and excess distance e.g.:
2019 MATTHEW SUMMERS 0.6NM
In the same style and size as previous entries.

84B The Handicappers Trophy

Is awarded at the sole discretion of the handicapper to the person who the handicapper deems flew consistently the closest to their handicap speeds.

92 The Total Points Championship

Shall be awarded to the pilot with the highest number of points in the season.

93 The Saturday Challenge

Shall be awarded to the pilot with the highest number of points accrued from the Saturday races. Where there is no race on a Saturday but two races on a Sunday, the points from the first of the two races shall be included.

94 The Novice Challenge

Shall be awarded to the pilot who is in their first season and has the highest number of points of all the pilots who are in their first season.

95 The Mitel Sword

Shall be awarded to the person (pilot or navigator) with the highest number of points who:

- Is serving or has served in HM armed forces with not less than 5 years reckonable service (including regular, reserve or cadet forces); and
- Held a MOD90 identity card for the duration of the service; and
- Has not been dishonourably discharged.

Cadet forces staff must have accepted the rank offered to them and the wearing of uniform.

96 The Homebuilt Challenge

Shall be awarded to the pilot of the aircraft with the highest number of points that that are accrued whilst piloting a homebuilt aircraft.

97 The British Air Racing Navigators Championship

Shall be awarded to the navigator with the highest number of points after accruing their N best results.

98 No competition

Save the novice challenge, where only one person is eligible for a trophy, the awarding of that trophy is at the discretion of the committee.

There is competition for a trophy where two or more eligible entrants have taken the starters flag in at least one race within the season, regardless of the number of points scored or any disqualification.

92 Trophies not the leave the UK

Winners of trophies who are not habitually resident in the UK or Isle of Man may not take those trophies out of the UK or IoM without the express permission of the RAeC RRRRA committee.

OTHER

93 Conduct of members

Members who conduct themselves in a manner that is unsportsmanlike or is deemed likely to bring the RAeC RRRRA into disrepute shall be expelled from the association and their racing licence suspended indefinitely. Where the conduct in question relates to a specific race, they shall also be disqualified from that race. Any trophies not yet awarded to that person shall be retained by the club.

PART B – PURSUIT RACES

94. Start time and start order

94.1 Pursuit races are a standing start format with all participating aircraft in the course at the same time.

94.2 Start time is determined by complex calculations in the handicapping software factoring in historic data, weather data and course data. By entering the competition, competitors accept the means by which the start times are calculated.

94.3 The slowest aircraft starts first. Take off times are designed for each aircraft to finish at the same time. The starting order and start times will be published by the handicapper prior to the start of the race.

94.4 The handicapper may apply a close start delay if start times are similar. If such a delay is applied, it will be deducted from the competitors final finishing time.

95. Start procedure

95.1 10 seconds before the competitors allotted start time, a flag or other visual indicator shall be displayed.

95.2 At the competitors allotted start time, the flag or other indicator shall be dropped in such a way that there is no ambiguity as to whether the signal has been given. The starters indication is the only official signal for the competitor to start their race.

95.3 Starting after the 10 second warning but before the starters indication is given shall result in a 10 second penalty.

95.4 Starting before the 10 second warning shall result in disqualification.

96. Take-off

96.1 Take-off is to be carried out at maximum power in all cases.

96.2 Where an aircraft is racing at a reduced power setting, the competitor should reduce power and fit any throttle and RPM stops as soon as reasonably practicable and as quickly as reasonably practicable after passing a point known as 'point bravo'.

96.3 Point bravo shall either be a clearly defined ground feature or turn point 1 ('TP1'), depending on the distance to TP1. The handicapper will determine the location of point bravo and its location will be provided in the written and verbal briefings.

97. Achieving race height

Race height must be achieved no later than the first turning point of the race (i.e. not scatter points). Usually this is TP1 but in some cases may be different.

98. Level turns

All turns must be level (+/- 50ft) for safety. Significant changes in level during a turn may constitute dangerous flying.

99. Missed turns

If a competitor misses a turn, they must not turn back to it. Where the turn is overshoot, the competitor must re-join the course at the shallowest possible angle, clearly stating location and intentions on the radio.

100. Overtaking

100.1 Overtaking aircraft must maintain a wingtip to wingtip separation of at least 15m for the duration of the manoeuvre.

100.2 Overtaking directly above or below another aircraft is strictly prohibited. The overtaking aircraft must maintain lateral separation at all times.

101. Finish

101.1 Competitors may descend to the minimum finish height after a point known as 'point alpha'. Point alpha is identified by a clear ground feature and must be stated in the brief.

101.2 Competitors racing at less than full power, must use full power after point alpha. Competitors should remove their throttle and RPM stops between the last turn point and point alpha in preparation for this requirement. As soon as practicable after passing point alpha, full power should be applied as quickly as practicable.

101.3 The finish can be imagined as an invisible rectangle perpendicular to the ground with lateral and vertical limits. The limits shall be prescribed by the officials and clearly stated in the briefing. Competitors must pass through the rectangle to finish the race. Failure to do so will result in disqualification.

101.4 After passing the finish line, competitors must begin a gentle climb and follow the directions given in the briefing whilst maintaining a high level of vigilance for other aircraft.

102. Smoke

The use of smoke systems immediately before, during or after a race is strictly prohibited for safety.

103. Speed

Competitors must maintain a consistent speed to the best of their abilities using the power settings agreed with the handicapper at the points in the race that they are required. Failure to do so may result in disqualification.

PART C – TIME TRIAL

104. Start time and start order

104.1 Time trial races are a flying start with only one aircraft in the course at any one time. The objective is for the aircraft to get as close to the expected race time as possible.

104.2 The time that the aircraft enters the course is of no consequence to the results, nor is the order that they participate in. The timekeeper shall record the actual time taken to complete the course which shall be taken into the final results.

104.3 Competitors must comply with the briefed procedures and order of participation for safety and time management.

105. Start procedure

105.1 The start can be imagined as an invisible rectangle perpendicular to the ground with lateral and vertical limits. The limits shall be prescribed by the officials and clearly stated in the briefing. Competitors must pass through the rectangle to start the race. Failure to do so will result in disqualification.

105.2 When cleared into the course by the Clerk of the Course, the competitor must establish themselves on a run in to the start. The run in must be straight and level at the power setting to be used for the race with throttle and RPM stops fitted where necessary.

105.3 The competitor's airspeed when passing the start must not exceed the gate speed assigned to them. Exceeding gate speed by 1-2% will result in a 5 second time penalty. Exceeding gate speed by more than 2% will result in a 10 second time penalty. Exceeding gate speed by more than 5% will result in disqualification.

106. Missed turns

If a competitor misses a turn, they must not turn back to it.

107. Early exit

If a competitor wishes to exit the course early and fail to complete the race, they may do so the next time they pass the start/finish line, following the finish procedure and declaring their intention not to continue on the radio.

108. Finish

108.1 The finish can be imagined as an invisible rectangle perpendicular to the ground with lateral and vertical limits. It will usually be the same as the start. The limits shall be prescribed by the officials and clearly stated in the briefing. Competitors must pass through the rectangle to finish the race. Failure to do so will result in disqualification.

108.2 After passing the finish line, competitors must begin a gentle climb and follow the directions given in the briefing.

108.3 Competitors must cross the finish at or above the height that they entered the race at the start. Failure to do so will result in disqualification.

109. Smoke

The use of smoke systems during a time trial is permitted and encouraged for entertainment value.

110. Speed

Competitors must maintain a consistent speed to the best of their abilities using the power setting agreed with the handicapper. The power setting must be maintained for the entire duration of the race. Failure to do so may result in disqualification.