BRITISH MODEL FLYING ASSOCIATION

CONTEST RULES - SECTION 5

R/C POWER

AEROBATICS HELICOPTERS

PYLON RACING WATERPLANES

SAM 35 VINTAGE FUN-FLY

DRONE (FPV) RACING

To be read in conjunction with the General Rules, Sections 1 and 2, which are available free of charge from the BMFA

Effective January 2019

Supersedes February 2018 Issue

SECTION 5 - R/C POWER RULES

CONTENTS

Note: FAI class rules for, F3A, F3P, F3M, F3S, F3C, F3N, F3D, F3R, F3X/Q40, and F5D are available for download at **www.fai.org/ciam-documents** or can be obtained from BMFA Head Office.

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Notes

Any new or changed rule is marked with a side bar similar to the one at the side of this paragraph. Where rules are renumbered due to additions or deletions of rules then that renumbering is not side-barred

Gender

Words of masculine gender should be taken as including the feminine gender unless the context indicates otherwise.

Synopsis of Changes

AEROBATICS

5.1.1.4, 5 & 6	New paras renumbered from 5.1.2.13, 14 & 15 and originals deleted
5.1.3	New subsection added and original sub-sections 5.1.3, 4, 5, 6 re-numbered.

PYLON RACING

5.3.7.1	Correction to paragraph reference
5.3.7.2	Ditto

HELICOPTER

5.4.2	Minor word change
5.4.2.6	Confirmation that BMFA General Rules apply in the event of a protest.
5.4.2.7	New Team Trials sub-section.
5.4.3	New Section added and previous Section 5.4.3 re-numbered 5.4.4

FUN FLY

5.7.1.1	Minor word change
5.7.1.2	U/C defines as at least one main wheel
5.7.2.1	Minor word change plus example added.
5.7.2.2	Further explanation of the use of mechanical mixes
5.7.3.1	One wheel u/c allowed
5.7.3.2	ditto
5.7.3.3(b)	Timing changed
5.7.3.6(d)	Scoring changed
5.7.3.10(d)	Minor word change to remove ambiguity
5.7.3.11(g)	Change to scoring system
5.7.5	Explanation of supply of hard hats

DRONE RACING

Complete new set of rules.

5.0 GENERAL RULES (applicable to all Classes in this rule book)

5.0.1 Regulations for Radio Control Power Models

The following rules must be read in conjunction with Sections 1 and 2 of the General Regulations and Rules obtainable from BMFA Head Office free of charge.

5.0.2 Model Weights

(a) Shall be as 1.2.2.1 (b) of the General Regulations noted above. Additional requirements may apply in specific classes where noted.

(b) Contest organisers may wish to note that a site exemption allowing models which weigh between 7 and 20 kg without fuel to be flown at heights exceeding 400 ft may be granted by the Civil Aviation Authority. For more details contact the BMFA's Leicester office.

(c) Models that weigh more than 20 kg without fuel with a current Civil Aviation Authority Exemption Certificate in force for the model, may be flown in competition if permitted by the relevant competition rules.

5.0.3 Entry

An entry shall consist of one machine and one reserve machine if desired. Component parts of the two machines may be interchanged, but not with those of other entrants.

5.0.4 Transmitters and Receivers

Rule 2.2.5 of the General Regulations and Rules shall apply.

5.0.5 Pilot Competence

(a) All entrants in radio control power contests are required to satisfy the CD that they are capable of flying to an adequate safety standard.

(b) For events covered in sections 5.2, 5.3, and 5.4 of this rule book, the BMFA Achievement Scheme 'B' Certificate is mandatory.

(c) For all other events, CD's are strongly recommended to insist that the 'B' Certificate is the required standard of pilot competence.

5.0.6 Protests and Appeals

(a) It is the right of a competitor to protest against any decision by a Contest Director (CD). Any such protest, however, must be made officially to the CD, and must be made on the day The protests and appeals procedure to be followed at the contest is also set out in the General Regulations and Rules, Section 2, and in the event of discrepancies they shall take precedence.

(b) If not satisfied with the CD's decision the competitor must, on the day, hand the CD the protest in writing, together with a fee of double the standard entry fee. The CD will then immediately empanel three appropriate persons to deal with the protest.

(c) The panel's decision is final, subject to the right of the competitor who submitted the protest to appeal to the BMFA Council.

(d) Appeals to Council about a decision made at a contest must be made as follows:

(i) Notification that an appeal is pending must be sent to the BMFA Competition Secretary to arrive not later than two weeks from the date of the contest.

(ii) The appeal itself, together with any supporting evidence, must be sent to the BMFA Competition Secretary to arrive not later than two months from the date of the contest.

(e) Protests made to Council after the contest may only be made direct to the BMFA Competition Secretary who, after considering the details of the protest, may bring such protests to the attention of BMFA Technical Council. Notification of an "after the contest" protest must be made to the Competition Secretary within 7 days of the contest and the protest and evidence submitted not later than two months from the date of the contest.

(f) Protests or appeals arising from a decision made by a Technical Committee on contest related matters may only be made directly to the Competition Secretary and must be accompanied by a £50 fee. The Competition Secretary will then convene a Panel comprising three Technical Committee Chairmen and not including the Chairman of the Technical Committee concerned. This Panel, plus the Competition Secretary, will study the appeal and examine the reasons for the Technical Committee's decision.

(g) If the protest or appeal is not upheld, then the appellant(s) must be informed of the reasons for the decision. This procedure does not preclude an appellant(s) taking a failed protest or appeal to the BMFA Full Council.

(h) If the written protest or appeal is upheld, the protest fee will be returned, however if the protest or appeal is unsuccessful the fee will be allocated to the team travel fund of the relevant discipline.

5.1 AEROBATICS

5.1.1 GENERAL

5.1.1.1 All BMFA Fixed Wing Aerobatic competitions, except Scale Aerobatics as per Section 5.2, are run on behalf of the BMFA by the BMFA Specialist Body, Great Britain Radio Control Aerobatic Association (GBR/CAA).

5.1.1.2 BMFA Competitions

BMFA Team Selection F3A Competitions.
BMFA Open F3A Competitions.
BMFA British National Championships.
BMFA Team Selection F3P Competitions.
BMFA Electric Indoor Aerobatics

5.1.1.3 Pilot Competence

Pilots must hold a minimum of a BMFA 'A' Certificate of Competence (or equivalent) to compete providing they comply with rule 5.0.5(a) above, and this does not conflict with any specific rules of the club site where the competition is being held.

5.1.1.4 Competition Announcement and Pilots Briefing

The CD should outline the rules applicable to the competition; flight order, start time, positioning of box markers, any local restrictions or special requirements of the site; Introduce judges & time keepers, scorers & other officials and liaise with the Senior Judge to determine judging breaks & the lunch break.

5.1.1.5 Mobile Telephones

No mobile telephones shall be used on a flight line at any competition or used in the vicinity of competitors' transmitters.

5.1.1.6 Transmitter Pound and Ready Box.

(a) A transmitter pound & peg off system for 35 MHz equipment must be provided. Competitors must obtain the correct 35mHz frequency peg before switching on their transmitter. 2.4GHz equipment is exempt from this rule. All BMFA Safety rules apply.

(b) Security of transmitters & other equipment during the competition is the responsibility of the owner. If 35mHz transmitters need to be retrieved from the pound, say for bad weather, the competition must not restart until all 35mHz transmitters are returned to the pound.

5.1.2 BMFA TEAM SELECTION COMPETITIONS FOR F3A & F3P

5.1.2.1 (a) BMFA F3A Team Selection competitions run by the GB/RCAA will be designated as such on the GBR/CAA Competition Calendar published on the GBR/CAA Forum and on the BMFA web site.

(b) GBR/CAA competitions which are designated as BMFA F3A 'Open Competitions' will be designated as such on the GBR/CAA competition calendar published on the GBR/CAA forum and on the BMFA web site.

(c) Team Selection competitions for F3A and F3P are run in accordance with the current FAI Sporting Code and relevant BMFA Variations thereof.

(d) F3A Team Selection competitions will use the current FAI schedules 'P' & 'F' and, at the GBR/CAA Championships, unknown schedules.

(e) F3P Team Selection competitions will use the current FAI schedules 'AP' & 'AF'.

5.1.2.2 Pre entry is essential and must be made by completing the entry form on the Specialist Body's website (http://www.gbrcaa.org). Contact details are on the website or contact the BMFA office (telephone: 0116-2440028). Entries cannot be accepted until the competition is published on the BMFA Contest & Events Calendar on the BMFA website and entry cannot be confirmed until payment is received. On the day entries may be permitted but only if there are vacancies.

5.1.2.3 The Specialist Body will organise a minimum of three BMFA Team Selection competitions per year in the appropriate classes. If four competitions are flown the best three results will count towards league position if 3 competitions are flown the best two results will count.

5.1.2.4 Any Team Selection competition (including any which are rearranged) must be held between 1 April and 31 October inclusive in any one year for F3A and between 1 October and the following 28 February for F3P

5.1.2.5 Team Selection competitions shall not:

a) take place in whole or in part within the period beginning 14 days before the UK team departs for, and ending 14 days after the UK team returns from, a World or European Championship unless there is full agreement from Team Members and the Team Manager;

b) be arranged (or rearranged) to clash with any competitions, either at home or abroad, at which team members would normally take part.

5.1.2.6 The Contest Director for each event will be appointed by the Specialist Body.

5.1.2.7 There will be no processing of models at competitions but pilots will be asked to declare model compliance on the entry form.

5.1.2.8 (a) A league table will be compiled for each class based on all the qualifying competitions which provide a result in the relevant qualifying period as stated in 5.1.2.4 and 5 above.

(b) The results from each event will be based on a points system used to form the table. In the event of a tie where only two flights are flown the competition will be declared a draw and maximum league points will be awarded to both pilots.

(c) Rules are based on those which appear in the current FAI Sorting Code and current BMFA Contest Rules, Section 5; R/C Power, Book 1, Aerobatics.

(d) Where necessary the FAI rules in the current FAI Sporting Code may have to be modified for use in one-day competitions.

5.1.2.9 The winner of the Team Selection League is the pilot with the highest number of league points from two of the three qualifying competitions or from one of the two qualifying competitions if only three competitions are held.

(a) Team Selection competitors will be allocated points as follows:

1st place	25 points
2nd	18 points
3rd	15 points
4th	12 points
5th	10 points
6th	8 points
7th	6 points
8th	4 points
9th	2 points
10th	1 point

(b) League table draws to be resolved as follows: - • Highest placing. Eg. pilot 1 has 25 points by winning one event. Pilot 2 has 25 points finishing 3rd at event 1 and

5th at event 2. Pilot 1 places above pilot 2 in the league. • Highest average score from all counting events using all counting rounds as a percentage of the maximum score possible. • Eg pilot 1 scores 357, 392 & 395. Avg = 381.33. % of max = 63.5% • Eg pilot 2 scores 379.33. Avg = 379.33. % of max = 63.2% • Pilot 1 places above pilot 2 in the league.

5.1.2.10 The F3A & F3P Team Selection League positions will determine the British Team to represent the United Kingdom (GBR) at European and World Championships. At the end of their respective seasons, the top three pilots from the Team Selection League will be formally offered a place on the British Team, and if accepted will be recommended to the BMFA as the GBR team. If one or more of the top 3 pilots declines their team place, then the next highest placed pilot in the Team Selection League will be offered a place until all places have been filled, or there are no more pilots from the Team selection League willing to be a member of the team. A reserve Team Member will also be selected from the next highest place pilot in the Team Selection League that is willing to accept a reserve place in the GBR Team.

5.1.2.11 There may be a fourth team member as long as he is a junior according to the FAI rules and he meets the BMFA rules for junior qualification below.

5.1.2.12 Rules for Junior Team member qualification:

(a) To be included as the fourth team member he must be accompanied to the championships by a parent, or guardian.

(b) The Junior must compete in recognised BMFA Team Selection competitions.

(c) To qualify for a team place, a junior must achieve at least 85% of the appropriate Team Selection League winner's total counting normalised scores.

5.1.3 BMFA OPEN F3A COMPETITIONS.

5.1.3.1 Under BMFA rules the GBRCAA is required to organise a minimum of 3 centralised (BMFA Open Competitions) per year, open to BMFA members.

5.1.3.2 The GBRCAA Competition Secretary shall nominate three National League events as 'BMFA Open League' events.

5.1.3.3 The nominated events shall be open to any BMFA member with a BMFA 'A' Certificate of Competence.

5.1.3.4 A BMFA Open League will be created for FAI schedule pilots with points allocated based on finishing positions. League positions will be calculated from the best 2 of 3 competitions.

5.1.3.5 A team to represent England and our International Team Member at the Triple Crown will be selected from this league, based on finishing positions.

5.1.3.6 BMFA Open League competitors will be allocated points as follows:

1st place	25 points
2nd	18 points
3rd	15 points
4th	12 points
5th	10 points
6th	8 points
7th	6 points
8th	4 points
9th	2 points
10th	1 point

5.1.3.7 The winner of the BMFA Open League shall be the pilot with the most league points from 2 of the 3 events. If 2 competitions are held, the best competition score will count and will be awarded the BMFA AEROMODELLER International Radio Control Trophy.

5.1.3.8 All other schedules shall be offered and will be run to GBRCAA National League rules.

5.1.3.9 The format and rounds to count shall be as follows (Same schedule flown in Preliminary and Final rounds): □ 6 rounds – 4 Preliminary Rounds, 2 Final Rounds (3 from 4 Preliminaries + best Final) □ 5 Rounds – 4 Preliminary Rounds, 1 Final Rounds (3 from 4 Preliminaries + Final) □ 4 Rounds – 3 from 4 □ 3 Rounds – 2 from 3 □ 2 Rounds – 1 from 2 □ 1 Rounds – 1 round will count.

5.1.3.10 League table draws to be resolved as follows: - • Highest placing. • E.g. Pilot 1 has 25 points by winning 1 event. Pilot 2 has 25 points finishing 3rd at event 1 and 5th at event 2. • Pilot 1 placed above pilot 2 in the league. • Highest average score from all counting events using all counting rounds as a percentage of the maximum score possible. • E.g. Pilot 1 scores 357, 392 & 395. Avg = 381.33. % of max = 63.5%. Pilot 2 scores 379.33. Avg = 379.33. % of max = 63.2% • Pilot 1 places above pilot 2 in the league.

5.1.3.11 Any disputes at BMFA Open League events shall be resolved using the guidelines set out in the Protests & Appeals section of the BMFA Contest Rules, Section 5; R/C Power.

5.1.4 BMFA VARIATIONS ON F3A AND F3P

5.1.4.1 Number of Rounds

(a) F3A See below.

(b) F3P Depending on the number of entries, competitions will comprise as many rounds of the AP schedule as time allows. The AF schedule may also be included.

5.1.4.2 Format and Rounds to Count

(a) BMFA Nationals - The Team Selection competition shall use preliminary and finals schedules in the current FAI Sporting Code. Team Selection format and rounds to count shall be as follows:

• 6 rounds – 4P, 2F (3 from 4 P + best F.)
• 5 Rounds – 3P, 2F (2 from 3 P + best F.)
• 4 Rounds – 3P, 1F (2 from 3 P + F.)
• 3 Rounds – 2P, 1F (Best P + F)
• 2 Rounds – 2P (Best P)
• 1 Round – 1 round will count.

(b) GBR/CAA Championships – The Team Selection competition shall use the preliminary and finals schedules listed in the current FAI Sporting Cade and unknown schedules. Team Selection format and rounds to count shall be as follows:

• 6 rounds – 2P, 2F, 2Ukn (Best P + F + Ukn + next highest score)
• 5 Rounds – 2P, 2F, 1Ukn (Best P + F + Ukn)
• 4 Rounds – 2P, 2F (Best P + F + next highest score.)
• 3 Rounds – 2P, 1F (Best P + F)
• 2 Rounds – 2P (Best P)
• 1 Rounds – 1P

(c) F3P 6 rounds - best 3 from 4 AP rounds and the best from 2 AF rounds to count.
5 rounds - best 2 from 3 AP rounds and the best from 2 AF rounds to count.
4 rounds - best 3 from 4 AP rounds
3 rounds - best 2 from 3 AP rounds
2 rounds - best 1 from 2 AP rounds
1 round to count.

5.1.4.3 Some variations of the rules may be necessary to run competitions over one or more days with the minimum number of officials.

5.1.4.4 At the BMFA British National Championships, model processing will not be carried out but safety checks will be made and flights may be timed.

5.1.4.5 Pilots may be asked to judge flights in those schedules in which they are not competing.

5.1.4.6 There will be at least 2 judges at each competition. The Specialist Body's Chief Judge has authority to decide who is qualified to judge these competitions and, in consultation with the Contest Director, will agree the judges for team selection and other BMFA competitions.

5.1.5 ADDITIONAL AEROBATIC SCHEDULES (with acknowledgements to GBR/CAA)

5.1.5.1 (a) The following Other Schedules are for the FAI F3A class of models

(b) BMFA and Team Selection Competitions may include any or all of the Masters, Intermediate and Clubman schedules as additional competitions. (Note: The Masters Schedule is the same as the current F3A 'Advance' Schedule as in the FAI Sporting Code)

5.1.5.2 Intermediate Schedule

I-01 Take-off Sequence

- As per 5.1.5.3 Take-off and Landing Judging Notes.

I-02 Triangular Loop (Base at the bottom):

From upright on the baseline pass centre and pull through a 3/8 loop into a 45° up line. Pull through a ¼ loop positioned on the centre line into a 45° down line. Pull through a 3/8 loop to exit upright at baseline height.

Judging notes.

- All radii equal.
- Entry and exit should be same height.
- Base of a 45˚ triangle is longer than other two lines.

I-03 Stall Turn, Full Roll Up:

From upright on the baseline pull through a ¼ loop into a vertical up line, perform a full roll, followed by a stall turn into a vertical down line. Pull through a ¼ loop to exit upright.

Judging notes.

- Full roll should be centred on vertical up line.
- If the stall turn is between half and 1 wing span then minus 1 point.
- If the stall turn is between 1 wing span and a 1.5 wing spans then minus 2/3 points.
- If the stall turn is between 1.5 wing spans and a 2 wing spans then minus 4/5 points.
- If the stall turn is greater than 2 wing spans then minus 10 points.
- If the aircraft exhibits a pendulum effect after exiting the stall turn then minus 1 point.

I-04 Four Point Roll:

From upright, perform 4 consecutive ¼ rolls, exit upright.

Judging notes.

- Pauses between rolls should be short and of equal length.
- Constant roll rate.
- Aircraft is on centre line of box in middle of inverted line.

I-05 Immelmann Turn with Half Roll:

From upright pull into a half loop and immediately perform a half roll to exit upright.

Judging notes.

- Constant radius through half loop.
- Half roll should immediately follow half loop.

I-06 Square Loop with ½ Rolls in legs 1 and 3:

From upright on the top line pass centre and push through a ¼ loop into a vertical down line. Perform a half roll centred on the vertical down line. Pull through a ¼ loop to upright on the baseline and fly past centre and pull through a ¼ loop to a vertical up line. Perform a half roll centred on the vertical up line. Push through a ¼ loop to exit upright on the top line.

Judging notes.

- All radii equal.
- Manoeuvre performed on centre line.
- Half rolls to be in centre of lines.

I-07 Split S Full Roll, Exit Inverted:

From upright on the top line perform a full roll immediately followed by half an outside loop to exit inverted on the baseline.

Judging notes.

- Half loop immediately follows full roll.
- Constant radius through half loop.

I-08 Cuban Eight with Half Rolls, Exit Inverted:

From inverted on the baseline fly past centre and push through 5/8 of an outside loop into a 45° down line. Perform a half roll in the centre of the 45° down line. Push through ¾ of an outside loop into a 45° down line. Perform a half roll in the centre of the 45° down line. Push through a 1/8 loop to exit inverted on the baseline.

Judging notes.

- Half rolls performed on centre line of box, and in middle of 45˚ lines.
- All radii equal.

I-09 Humpty Bump Push, Pull, Pull:

From inverted on the baseline push through a ¼ loop into a vertical up line. At the top of the vertical up line pull through a half inside loop into a vertical down line. At the bottom of the down line, pull through a ¼ loop to exit upright on the baseline.

Judging notes.

- All radii equal.

I-10 Figure S:

From upright on the baseline on centre pull through half an inside loop and immediately push into half an outside loop to exit upright on the top line.

Judging notes.

- All radii equal.
- There should be no line between half loops.

I-11 Figure 6, Half roll down:

From upright on the top line, push into a vertical down line. Perform a half roll centred on the vertical down line. At the bottom of the down line, push through ¾ of an outside loop to exit upright at mid height.

Judging notes.

- All radii equal.
- Roll must be in middle of down line.

I-12 Knife Edge, Exit Inverted:

From upright at mid height before centre perform a ¼ roll (either direction) into knife edge. Past centre perform a ¼ roll to exit inverted at mid height.

Judging notes.

- Knife edge should be held long enough to demonstrate controlled, sustained knife-edge flight (3 to 5 seconds as a guide).
- Whole manoeuvre should be centred.

I-13 Half Loop:

From inverted at mid height, push through half a loop to exit upright on the top line.

Judging notes.

- Radius must be constant

I-14 Three Turn Spin:

From upright on the top line, on the centre line of the box perform three consecutive spins followed by a vertical down line. At bottom of vertical down line, pull through a ¼ loop followed by a well-defined, straight line to exit upright on the baseline.

Judging notes.

- Climbing on entry into spin, downgrade 1 point per 15 degrees.
- Yawing before entry into spin, downgrade 1 point per 15 degrees.
- Snap-roll entry, zero points.
- Forced entry, severe downgrade.
- Spin under or over rotation, downgrade 1 point per 15 degrees.

I-15 Landing Sequence

- As per 5.1.5.3 Take-off and Landing Judging Notes.

Maximum score = 400. Promotion = 260 (65%)

5.1.5.3 Clubman Schedule

C-01 Rectangular Take-off Sequence

- As per 5.1.5.3 Take-off and Landing Judging Notes.

C-02 Two inside Loops:

From upright on the baseline at the centre line pull through two inside loops to exit upright at baseline height.

Judging notes.

- Loops to be concentric and of equal size.
- Constant radius.
- Entry and exit should be same height.

C-03 Immelmann Turn with Half Roll:

From upright pull into a half loop and immediately perform a half roll to exit upright.

Judging notes.

- Constant radius through half loop.
- Half roll should immediately follow half loop.

C-04 One Outside Loop:

From upright on the top line at the centre line push through one outside loop to exit upright at baseline height.

Judging notes.

- Loops to be concentric and of equal size.
- Constant radius.
- Entry and exit should be same height.

C-05 Split S:

From upright on the top line perform a half roll immediately followed by half an inside loop to exit upright on the baseline.

Judging notes.

- Half loop immediately follows half roll.
- Constant radius through half loop.

C-06 Cuban Eight with no Rolls:

From upright on the baseline fly past centre and pull through 5/8 of an inside loop into a 45° down line. Push through ¾ of an outside loop into a 45° down line. Pull through a 1/8 loop to exit upright on the baseline.

Judging notes.

- All radii equal.
- Entry and exit should be same height.
- Crossover on 45 degree down lines must be over centre line.

C-07 Stall Turn:

From upright on the baseline pull through a ¼ loop into a vertical up line, followed by a stall turn into a vertical down line. Pull through a ¼ loop to exit upright.

Judging notes.

- If the stall turn is between half and 1 wing span then minus 1 point.
- If the stall turn is between 1 wing span and a 1.5 wing spans then minus 2/3 points.
- If the stall turn is between 1.5 wing spans and a 2 wing spans then minus 4/5 points.
- If the stall turn is greater than 2 wing spans then minus 10 points.
- If the aircraft exhibits a pendulum effect after exiting the stall turn then minus 1 point.

C-08 Slow Roll:

From upright on the baseline perform a slow roll to exit upright on the baseline.

Judging notes.

- Constant roll rate.
- Roll should take 3 to 5 seconds as a guide
- Model should be inverted on centre line.

C-09 Half Square Loop, half roll on exit:

From upright on the baseline pull through a ¼ loop into a vertical up line. Pull through a ¼ loop followed by a half roll to exit up right on the top line.

Judging notes.

- All radii equal.
- There should be a short pause between ¼ loop and half roll.

C-10 Two Turn Spin:

From upright on the top line, on the centre line of the box perform two consecutive spins followed by a vertical down line. At the bottom of the vertical down line, pull through a ¼ loop followed by a well-defined, straight line to exit upright on the baseline.

Judging notes.

- Climbing on entry into spin, downgrade 1 point per 15 degrees.
- Yawing before entry into spin, downgrade 1 point per 15 degrees.
- Snap-roll entry, zero points.
- Forced entry, severe downgrade.
- Spin under or over rotation, downgrade 1 point per 15 degrees.

C-11 Landing Sequence

- As per 5.1.5.3 Take-off and Landing Judging Notes.

Maximum score = 250. Promotion = 150 (60%)

5.1.5.4 Take-off & Landing Judging Notes

(a) Take-off Sequence

The take-off is possibly the most important manoeuvre of all, as it is the first manoeuvre you fly in front of the judges, so it is up to you to show us how good you are. The take-off should be flown with the same precision and grace as all the other manoeuvres in the schedule. All turns should be as flat as possible to give a good impression in the judges' eye of smoothness and gracefulness.

The procedure for take-off is as follows:

1. The model should be placed on the runway by your helper facing into wind with a very slow idle and released. When released the helper should not touch the model again as this could be classed as an assisted take-off. However a point of safety should be considered in a crosswind or on rough ground where the model may 'weathercock' towards the pilot, judges, pits or spectator line. It may be necessary to hold the tail of the model while the engine revs are increased and the model moves forward to overcome any resistance of the undercarriage wheels and the rudder has some authority
2. The pilot slowly applies the power and the model moves off in a straight line. When flying speed is reached the model lifts off with wings level and a gentle rate of climb which should not exceed an angle of 30 degrees. Power can now be reduced to allow the model to fly at the speed which you like to fly through the schedule.

3a. **Clubman Schedule**: The model continues until the model is upwind and completes two 90° turns onto the downwind leg. The downwind leg should be straight and level at the preferred baseline height of the schedule to be flown. Two further 90° turns are made to bring the model back onto the preferred flight line and baseline height for the second manoeuvre of the schedule to be flown on the box centre line. (The first manoeuvre is considered to be the Take-Off sequence). There is an option at the downwind turn. If preferred a Half Reverse Cuban Eight can be flown to bring the model back onto the schedule base line.

3b **Intermediate Schedule**: The pilot now proceeds to turn the model 90 degrees into a crosswind leg with the model still climbing towards the preferred baseline height. At the appropriate distance out the model should turn upwind to start its 270 degree turn into the downwind trimming pass, which should be positioned over the 150 metres markers. When approximately level with the downwind marker the pilot initiates a turn-around manoeuvre of his choice. Do not rush the take-off a rushed take-off normally leads to a rushed flight and points lost.

Note: When the model passes over the centre line on the downwind leg, the take-off manoeuvre is complete and will not be judged beyond that point.

Possible downgrades

1. Assisted take-off: zero points. (see notes above)
2. Model does not track straight on take-off: 1-2 points. Beware of the flying surface i.e. ruts and pot holes on grass sites.
3. Wings not level after take-off: 1 point per 15 degrees.
4. Rate of climb too steep: 1-2 points above 30 degrees.
5. Model goes behind judge's line after take-off: zero points.
6. Model retouches runway after lift-off: 1 point.
7. Bits come off model on take-off: zero points for the whole flight.
8. The 90 degree turn is not 90 degrees: 1 point per 15 degrees.
9. The 270 degree turn is not 270 degrees: 1 point per 15 degrees.
10. The model is flown in too close or too far out on completion of turn-around manoeuvre: 1-3 points depending on its severity. Judges you need to be careful

about what is considered to be too close or too far out. The criterion set out in the judges' guide suggests 100-175 metres.

(b) Landing

The landing sequence should be flown with the same precision as all other manoeuvres in the schedule.

a. **Clubman Schedule**: On completion of the last manoeuvre a short straight and level flight should be flown. At reduced power the model completes two 90 degree turns into a level or descending downwind leg and then executes a two more 90 degree turns onto the final descending approach to the runway, touching down inside the landing zone

b. **Intermediate Schedule**: On completion of the last manoeuvre a short straight and level flight should be flown. At reduced power the model turns 180 degrees into a level or descending downwind leg and then executes a second 180 degree turn upwind for the final descending approach to the runway, touching down inside the landing zone.

Landing is complete after the model has rolled 10 metres or has come to rest inside the landing zone. The landing zone is an area described by a circle of 50 metres radius or lines across a standard runway spaced 100 metres apart where the runway is 10 metres wide.

Possible downgrades

1. Model does not follow landing sequence: zero points.
2. Landing gear retracts or wheels come off on landing, zero points.
3. Model lands outside the zone: zero points.
4. 90 or 180 degree turns not 90 or 180 degrees 1-2 points.
5. Wings not level in downwind and upwind legs 1 point per 15 degrees.
6. Model does not track on runway after touchdown 1-2 points.
7. Model bounces on touchdown 1-2 points.
8. Model climbs and dives on downwind leg or final approach to runway 1-2 points.
9. Model changes heading left or right on approach to runway 1-2 points.

The landing will not be downgraded if:

1. If the pilot elects side-slip to land due to crosswind conditions, in which case the upwind wing will be low.
2. Wing dips due to cross wind turbulence and is corrected IMMEDIATELY.

Take-offs & Landings are scored 0-10 with a K factor of 2 for Clubman and 1 for Intermediate, using the downgrades stated above,

5.1.6 Additional Indoor Aerobatic Schedules (with acknowledgements to GBR/CAA)

5.1.6.1 (a) The following Indoor Schedules are for the FAI F3P class of models

(b) BMFA and F3P Team Selection Competitions may include any or all of the following schedules: B+, B and C as additional events.

5.1.6.2 Schedule B+

B+01 Loop with half roll integrated into top 90°, Exit Inverted:

From upright on the baseline at the centre line pull through a full loop with a half roll integrated into the top quarter. Exit inverted at baseline height.

Judging notes

- All radii equal.
- Entry and exit should be same height.

- Constant roll rate.
- Roll should be integrated with top 90° of loop.

B+02 Half Reverse Cuban Eight, Full Roll up:

From inverted on the baseline push through a 1/8 loop into a 45 degree up line. Perform a full roll. Pull through a 5/8 loop to exit upright on the baseline.

Judging notes

- All radii equal.
- Up line is not 45 degrees (downgrade 1 point per 15 degrees).
- Heading change (downgrade 1 point per 15 degrees).
- Half roll performed in middle of 45 degree line.

B+03 Reverse Knife Edge:

From upright on the baseline before centre perform a 1/4 roll (either direction) into knife edge flight. On centre perform a half roll (either direction) into knife edge flight. Perform a 1/4 roll (either direction) to exit upright on the baseline.

Judging notes

- Knife edge should be held long enough to demonstrate controlled, sustained knife-edge flight (2 to 3 seconds as a guide).
- Constant roll rate.
- Manoeuvre centred on centre line.
- Entry and exit should be same height.

B+04 Top Hat, 1/4 Roll Up, 1/4 Roll Down:

From upright on the baseline pull through a ¼ loop into a vertical up line followed by a ¼ roll (either direction). Pull through a ¼ loop into cross box inverted flight. Pull through a ¼ loop into a vertical down line followed by a ¼ roll (either direction). Pull through a ¼ loop to exit upright on the baseline.

Judging notes

- All radii equal.
- Heading not parallel or perpendicular (downgrade 1 point per 15 degrees).

B+05 2 Roll Rolling Circle:

From upright on the baseline at the centre line perform a two roll rolling circle to exit upright at baseline height.

Judging notes

- Constant roll rate and radius.
- Manoeuvre centred on centre line.
- Entry and exit should be same height.

B+06 Humpty Bump, Pull, Pull, Push. Half Roll Up and Down. Exit Inverted:

From upright on the baseline pull through a ¼ loop into a vertical up line. Perform a half roll. At the top of the vertical up line pull through a half inside loop into a vertical down line. Perform a half roll. At the bottom of the down line, push through a ¼ loop to exit inverted on the baseline.

Judging notes

- All radii equal.
- Half rolls to be performed in middle of vertical up line.
- Lines are not vertical (downgrade 1 point per 15 degrees).

B+07 Stall Turn, 1/4 roll up and down. Exit Inverted:

From inverted on the baseline push through a ¼ loop into a vertical up line on the centre line, perform a ¼ roll, followed by a stall turn into a vertical down line. Perform a ¼ roll. Push through a ¼ loop to exit inverted on the baseline.

Judging notes

- ¼ rolls should be centred on the vertical up line.
- If the stall turn is between half and 1 wing span then minus 1 point.
- If the stall turn is between 1 wing span and a 1.5 wing spans then minus 2/3 points.
- If the stall turn is between 1.5 wing spans and a 2 wing spans then minus 4/5 points.
- If the stall turn is greater than 2 wing spans then minus 10 points.
- If the aircraft exhibits a pendulum effect after exiting the stall turn then minus 1 point.

B+08 Half Roll Rolling Half Circle:

From inverted on the baseline perform a half horizontal circle with an integrated half roll to the outside to exit upright on the baseline.

Judging notes

- Constant roll rate and radius.
- Entry and exit should be same height.

B+09 Cuban Eight with Half Rolls:

From upright on the baseline fly past centre and pull through 5/8 of an inside loop into a 45° down line. Perform a half roll in the centre of the 45° down line. Pull through ¾ of an inside loop into a 45° down line. Perform a half roll in the centre of the 45° down line. Pull through a 1/8 loop to exit upright on the baseline.

Judging notes

- Half rolls performed on centre line and in middle of 45˚ lines.
- All radii equal.

B+10 Half Knife Edge Circuit, Half Roll, Exit Inverted:

From upright on the baseline perform a ¼ roll (either direction) to knife edge flight. After a short pause push or pull through a ¼ horizontal circle into cross box knife edge flight. Perform a half roll. Push or pull through a ¼ horizontal circle into a parallel knife edge flight. After a short pause perform a ¼ roll (either direction) to exit inverted on the baseline.

Judging notes

- All radii equal.
- Heading not parallel to hall (downgrade 1 point per 15 degrees).
- Constant knife edge flight (downgrade 1 point per 15 degrees).
- Roll not in centre of cross box flight.
- Constant height.

B-09 One Torque Roll, Exit Inverted:

From inverted on the baseline reduce flying speed and pivot the model about the centre of gravity into a vertical hover on the centre line. Pause briefly and then perform one torque roll, pause briefly and then pivot the model about the centre of gravity to exit inverted on the baseline.

Judging notes

- Manoeuvre centred on centre line.
- Height in torque roll to be constant.
- Model does not rotate with torque.

Maximum score = 370. Promotion = 259 (70%)

5.1.6.3 Schedule B

B-01 Take-off Sequence:

Take off unassisted and complete no more than 1½ circuits before entering the first manoeuvre. The climb out should be gradual and 90 degree turns controlled until after ½, 1 or 1½ circuits the model enters the first manoeuvre.

Judging notes.

- Change in height to be smooth and constant.
- Lines parallel to hall.

B-02 Triangular Loop (Base at the bottom):

From upright on the baseline pass centre and pull through a 3/8 loop into a 45° up line. Pull through a ¼ loop positioned on the centre line into a 45° down line. Pull through a 3/8 loop to exit upright at baseline height.

Judging notes.

- All radii equal.
- Entry and exit should be same height.
- The base of a 45˚ triangle is longer than other two lines.

B-03 Humpty Bump Pull, Pull, Pull, half roll up:

From upright on the baseline pull through a ¼ loop into a vertical up line. Perform a half roll. At the top of the vertical up line pull through a half inside loop into a vertical down line. At the bottom of the down line, pull through a ¼ loop to exit upright on the baseline.

Judging notes.

- All radii equal.
- Half roll performed in middle of vertical up line.
- Lines not vertical (downgrade 1 point per 15 degrees).

B-04 One Roll Rolling Circle:

From upright on the baseline at the centre line perform a one roll rolling circle to exit upright at baseline height.

Judging notes.

- Constant roll rate and radius.
- Manoeuvre centred on centre line.
- Entry and exit should be same height.

B-05 Half Knife Edge Square Circuit, exit inverted:

From upright on the baseline perform a ¼ roll (either direction) to knife edge flight. After a short pause push or pull through a ¼ horizontal circle into cross box knife edge flight. Push or pull through a ¼ horizontal circle into a parallel knife edge flight. After a short pause perform a ¼ roll (either direction) to exit inverted on the baseline.

Judging notes.

- All radii equal.
- Heading not parallel or wings not perpendicular (downgrade 1 point per 15 degrees).
- Constant knife edge flight (downgrade 1 point per 15 degrees).
- Constant height.

B-06 Square Loop, exit inverted:

From inverted on the baseline pass centre and push through a ¼ loop into a vertical up line. Push through a ¼ loop into horizontal upright flight. Push through a ¼ loop into a vertical down line. Push through a ¼ loop to exit inverted at baseline height.

Judging notes.

- All radii equal.

- Entry and exit should be same height.
- Lines should be straight (downgrade 1 point per 15 degrees) and of equal length.
- Manoeuvre should be centred on centre line.

B-07 Half Inverted Circle, half roll on exit:

From inverted on the baseline perform a half horizontal control line circle immediately followed by a half roll to exit upright on the baseline.

Judging notes.
- All radii equal.
- Consistent radius.
- Entry and exit should be same height.
- Heading change (downgrade 1 point per 15 degrees).
- Half roll should be performed immediately after half horizontal circuit.

B-08 Stall Turn, Full Roll Up:

From upright on the baseline pull through a ¼ loop into a vertical up line, perform a full roll, followed by a stall turn into a vertical down line. Pull through a ¼ loop to exit upright.

Judging notes.
- Full roll should be centred on vertical up line.
- If the stall turn is between half and 1 wing span then minus 1 point.
- If the stall turn is between 1 wing span and a 1.5 wing spans then minus 2/3 points.
- If the stall turn is between 1.5 wing spans and a 2 wing spans then minus 4/5 points.
- If the stall turn is greater than 2 wing spans then minus 10 points.
- If the aircraft exhibits a pendulum effect after exiting the stall turn then minus 1 point.

B-09 One Torque Roll:

From upright on the baseline reduce flying speed and pivot the model about the centre of gravity into a vertical hover on the centre line. Pause briefly and then perform one torque roll, pause briefly and then pivot the model about the centre of gravity to exit upright on the baseline.

Judging notes.
- Manoeuvre centred on centre line.
- Height should be constant through roll.
- Model should rotate with torque.

B-10 Landing Sequence:

Exit the last manoeuvre and complete no more than 1½ circuits before descending to land in front of the pilot. The descent should be gradual and 90 degree turns controlled.

Judging notes.
- Change in height should be smooth and constant.
- Lines should be parallel to hall.

Maximum score = 370. Promotion = 222 (60%)

5.1.6.4 Schedule C

C-01 Take-off Sequence:

Take off unassisted and complete no more than 1½ circuits before entering the first manoeuvre. The climb out should be gradual and 90 degree turns controlled until after ½, 1 or 1½ circuits the model enters the first manoeuvre.

Judging notes.
- Change in height to be smooth and constant.
- Lines parallel to hall.

C-02 Square Loop:

From upright on the baseline pass centre and pull through a ¼ loop into a vertical up line. Pull through a ¼ loop into horizontal inverted flight. Pull through a ¼ loop into a vertical down line. Pull through a ¼ loop to exit upright at baseline height.

Judging notes.

- All radii equal.
- Entry and exit should be same height.
- Lines are not straight (downgrade 1 point per 15 degrees) and of equal length.
- Manoeuvre centred on centre line.

C-03 Stall Turn:

From upright on the baseline pull through a ¼ loop into a vertical up line, followed by a stall turn into a vertical down line. Pull through a ¼ loop to exit upright.

Judging notes.

- If the stall turn is between half and 1 wing span then minus 1 point.
- If the stall turn is between 1 wing span and a 1.5 wing spans then minus 2/3 points.
- If the stall turn is between 1.5 wing spans and a 2 wing spans then minus 4/5 points.
- If the stall turn is greater than 2 wing spans then minus 10 points.
- If the aircraft exhibits a pendulum effect after exiting the stall turn then minus 1 point.

C-04 Knife Edge, Exit Inverted:

From upright on the baseline before centre perform a ¼ roll (either direction) into knife edge. Past centre perform a ¼ roll to exit inverted at baseline height.

Judging notes.

- Knife edge should be held long enough to demonstrate controlled, sustained knife-edge flight (3 to 5 seconds as a guide).
- Manoeuvre centred on centre line.

C-05 Half Cuban Eight (No Roll):

From inverted on the baseline push through 5/8 of an outside loop into a 45° down line. Pull through a 1/8 loop to exit upright on the baseline.

Judging notes.

- All radii equal.
- Down line is not 45 degrees (downgrade 1 point per 15 degrees).
- Heading change (downgrade 1 point per 15 degrees).

C-06 360° Control Line Circuit:

From upright on the baseline at the centre line perform a 360 degree horizontal control line circle to exit upright on the base line on the centre line.

Judging notes.

- Consistent radius.
- Manoeuvre centred on centre line.
- Entry and exit should be same height.

C-07 Half Cuban Eight, half roll:

From upright on the baseline pull through 5/8 of an inside loop into a 45° down line. Perform a half roll in the centre of the 45° down line. Pull through a 1/8 loop to exit upright on the baseline.

Judging notes.

- All radii equal.
- Down line is not 45 degrees (downgrade 1 point per 15 degrees).
- Heading change (downgrade 1 point per 15 degrees).
- Half roll performed in middle of 45 degree line.

C-08 Prop Hang:

From upright on the baseline reduce flying speed and pivot the model about the centre of gravity into a vertical hover on the centre line. Hold for 3 to 5 seconds and then pivot the model about the centre of gravity to exit upright on the baseline.

Judging notes.

- Manoeuvre centred on centre line.
- Height of prop hang should be constant.
- Roll rate change during prop hand (downgrade 1 point per 15 degrees).

C-09 Landing Sequence:

Exit the last manoeuvre and complete no more than 1½ circuits before descending to land in front of the pilot. The descent should be gradual and 90 degree turns controlled.

Judging notes.

- Change in height to be smooth and constant.
- Lines parallel to hall.

Maximum score = 230. Promotion = 138 (60%)

5.1.7 VINTAGE AEROBATICS

5.1.7.1 Object

To provide an aerobatic competition based on early 1960's practice with specific cut-off dates for model designs and the use of power limiting engine eligibility rules.

5.1.7.2 Eligible Models

(a) Any design which was published, kitted or used in competition prior to 31st December 1964. Proof must be supplied by the competitor if required by any Contest Director.

(b) A list of eligible models and plan sources has been compiled from information gained from several places. It is available from the BMFA office on request and is offered with no guarantees although every effort has been made to ensure that the information is correct.

5.1.7.3 Eligible Engines

(a) Any two-stroke cross flow engine up to 0.61 in^3 capacity (i.e. no schnuerle ported engines)

(b) Any four-stroke engine up to 0.80 in^3 capacity.

5.1.7.4 Miscellaneous

(a) Tuned pipes are not allowed.

(b) Models should keep to the general construction shown on the plan but minor deviations are allowed, e.g. metal engine mount instead of wooden bearers (allows easy change of engine type) and bolts instead rubber bands for securing the wing.

(c) If the wing is changed from built up balsa construction to foam, this will lead to down-grading in any concours event unless the plan shows foam construction as an alternative method of construction.

(d) Similar down-grading will apply to the use of glass fibre fuselages unless they were featured in the original design.

(e) A fabric/tissue and dope covered model would receive higher marks than a film covered model, assuming the finish was to an identical standard.

(f) For 0.60 in^3 engines and above, the minimum propeller diameter is to be 12 inches and the minimum pitch is to be 6 inches.

5.1.7.5 Scoring

Each manoeuvre flown will be marked out of 10 by each judge. These marks will be multiplied by the appropriate 'K' factor and the total scored for all manoeuvres flown, plus any landing bonuses, will be that judges score for that particular flight.

5.1.7.6 Schedule of Manoeuvres (Based on the 1960 FAI schedule)

Manoeuvre	**K factor**
(1) Take off	5
(2) Straight flight into wind (minimum time 5 seconds)	5
(3) Procedure turn (left turn 90°, right turn 270°)	5
(4) Return straight flight on same flight path as 1 (min. time 5 seconds)	5

(5) Stall turn 5
(6) Immelman turn (1/2 loop followed by 1/2 roll) 10
(7) Three inside loops (superimposed)
1st loop 4
2nd loop, consecutive, on same axis 6
3rd loop, consecutive, on same axis 8
(8) Three outside loops (superimposed)
1st loop 6
2nd loop, consecutive, on same axis 8
3rd loop, consecutive, on same axis 10
(9) Reversal (split S). ($^1/_2$ roll followed by $^1/_2$ loop) 10
(10) Roll - to be followed immediately by; 10
(11) Roll in opposite direction 12
(12) Tail slide (model stalls in a vertical attitude, then falls back a minimum of three aircraft lengths, falling forward to recover in normal level flight) 15
(13) Horizontal eight 12
(14) Cuban Eight 12
(15) Vertical eight 12
(16) Inverted flight in a straight line (minimum time 5 seconds) 14
(17) Inverted Horizontal eight, left circle, then right circle (min. diameter of circles 50 m, Max. diameter 100 m) 24
(18) Vertical upward roll 12
(19) Three turn spin (recovery in same direction as entry) 12
(20) Approach 10
(21) Landing 5
Touch down in 20 m circle = 100 points bonus
Touch down in 50 m circle = 50 points bonus

5.2 IMAC UK SCALE AEROBATICS (with acknowledgement to IMAC UK)

5.2.1 Objective:

Inspired by full-scale aerobatics, the intent is to fly scale aerobatic model aircraft in a competitive and realistic manner that is challenging for the contestants as well as interesting for spectators.

5.2.2 General:

(a) All BMFA regulations and CAA regulations covering the RC flier, aeroplane and equipment, shall be applicable to this event.

(b) Consideration of safety for spectators, contest personnel, and other contestants is of the utmost importance in this event. Any unsportsmanlike conduct or hazardous flying over a controlled spectator area will be cause for immediate disqualification of that flight. Further infractions will result in the removal of that pilot from the contest.

5.2.3 Aerobatics Official Scale Flying and Judging Guide.

5.2.3.1 Details of schedules for all classes and IMAC rules can be downloaded from the IMAC website - http://imacuk.org

5.2.3.2 Note: Unknown schedules are not available until the day of competition. Hard copies only are obtained by the IMAC Competition Secretary for each competition and not distributed until being given to Pilots by the CD at the official pilot briefing.

5.3 PYLON RACING

5.3.1 General

5.3.1.1 Contest Records

Within model pylon racing it is possible to exaggerate the true speed of an aircraft by incorrectly positioning the course. For this reason all R/C Power Pylon Racing records submitted must contain a signed statement from the Contest Director to verify that the course was re-measured after the record flight and that all the dimensions are as laid down in the current BMFA or FAI rule books

5.3.2 BMFA Variations on F5D Pylon Racing.

Note: The F5D class rules can be downloaded at www.fai.org/ciam-documents or obtained direct from BMFA Head Office.

5.3.2.1 Starting Procedure

F5d will adopt the same starting procedures as the host classes. The timing of the models will start at the drop of the starter's flag or the signal given by the electronic race program (not when the model reaches the start line after a run up period). Launching out the back of the course is specifically prohibited in the interests of safety.

5.3.2.2 Nomination of Contest Director

A member of the F5D fraternity will be nominated as the class CD at the start of every meeting, including the BMFA Nationals. He/she will be the sole point of contact between the event organisers and the F5D competitors and will also determine what level of scrutineering will take place, if any.

5.3.2.3 Weighing of Models

Any scales made available for competitors to check the weight of their models will be considered as being the "scales of the day". The scales supplied will not always be the same set and for that reason they will not necessarily be calibrated. The scales will be made available throughout the period of the competition and it is the competitor's responsibility to ensure that his model complies with the manufacturer's maximum all up weight. In the event of any dispute regarding the weight, wing loading or dimensions of any model, the manufacturer's figures will be considered as fact.

5.3.3 UK F5D Team Selection

5.3.3.1

(a) Selection for a World or European Championship team will be made in the year preceding the event.

(b) Team Selection will be based on an individual's cumulative scores from BMPRA sanctioned league events held during the qualification year.

(c) The score for each event is calculated as per F5D league scoring. The best scores from the eligible events to count are added together to get a total team selection score. These scores are ranked and the top three competitors are offered a place on the team.

(d) If any of those qualifying do not wish to be a team member, the place or places will be offered to other competitors in order of the team selection score ranking, i.e. 4th place in is 1st reserve for the team.

(e) The number of events to count for team selection is as follows:

4 events from 7 or more eligible events to count
4 events from 6 eligible events to count
3 events from 5 eligible events to count
3 events from 4 eligible events to count
3 or less events flown, all rounds to count

(f) Selected team members may nominate one “Caller” to be included as part of the Championships team. The “Caller” is an official member of the team and therefore must also hold a valid FAI Sporting License for the year of the Championship event and should to commit to attending the relevant Championships as a team member.

(g) The selected team is submitted to the BMFA by the appropriate Specialist Body, currently the BMPRA.

5.3.4 UK F5D League Scoring

5.3.4.1 (a) For each event the winning competitor will be the one with the lowest cumulative time for the counting heats from the day’s competition.

(b) The winner of the league will be the individual with the lowest total time, with a maximum of 5 rounds counting towards the total. The team will consist of the three pilots gaining the lowest total time for the required number of qualifying rounds as stated at clause 5.3.3.1 (e) above. No team member will be selected if they have not competed in any rounds..

5.3.5 Sport 46 Pylon Racing

The Sport 46 class of pylon racing is intended as an introductory beginners class. Essentially these rules define a pylon racing model that may be flown at most flying sites within the UK.

All of the hardware such as engines and propellers will be readily available in models shops, with no need to source items from specialist suppliers.

The rules allow for all F3D pylon racing airframes designed or constructed since 1985 to be used, when equipped with engines as described below. In addition own design or newly released airframes conforming to these technical specifications may be used.

5.3.5.1 Definition of Radio Control Pylon Racing Model Aircraft (Sport 46 Type)

Model aircraft in which the propulsion energy is provided by a piston type engine and in which the lift is obtained by aerodynamic forces acting on the supporting surfaces, which, except for the control areas, must remain fixed in flight.

5.3.5.2 Technical Specifications of Pylon Racing Model Aircraft

(a) The model aircraft must be of conventional design with forward wing and an aft empennage with the general lines of a full size aircraft.

(b) A model aircraft including engine and exhaust system may not be used by more than one race team.

(c) Each competitor may process and use a maximum of three models during a contest.

5.3.5.3 Weight

Weight, less fuel but including all equipment necessary for flight, shall be at least 2250 g and not more than 3000g. If ballast is used it must be permanently and safely affixed.

5.3.5.4 Fuselage

5.3.5.4.1 Cross-section

The fuselage shall have a minimum height of 175 mm and a minimum width of 85 mm, the measurements to be of the fuselage body and are to exclude any fins, attachments or spacers. Both minimum dimensions must occur at the same cross-section location. The fuselage at this point will have a minimum cross sectional area of 100 cm2 excluding fillets and competitors shall provide templates to prove this. Fillets are not considered part of the fuselage or lifting surfaces.

5.3.5.4.2 Cowls

There is no requirement to cowl the engine.

5.3.5.4.3 Cockpit

A cockpit or canopy profile must be evident and capable of enclosing a dummy pilot's head 50 mm from the chin to the top of the head. The canopy need not be transparent and a dummy pilot’s head need not be fitted.

5.3.5.5 Lifting Surfaces

5.3.5.5.1 Area of Surfaces

Total projected area o the lifting surfaces (wing and horizontal tail combined) shall be a minimum of 34 dm^2. With a biplane, the smaller of the two wings shall have at least 2/3 of the area of the larger wing. No delta or flying wing type aircraft are permitted.

5.3.5.5.2 Wing Span

Minimum wing span shall be 1150 mm for a monoplane and 750 mm for the largest wing of a biplane. Maximum wing span shall be 1800 mm.

5.3.5.5.3 Wing Thickness

Wing thickness of the root shall be at least 22 mm for a monoplane, and 18 mm for a biplane. On a biplane with different size wings, the smaller wing must be at least 13 mm thick at the root. Wing thickness may decrease in a straight line taper from root to tip as viewed from the leading or trailing edge.

Note: Root shall be defined as the innermost wing section, not counting fillets that may be measured without removing wing from fuselage.

On a completely exposed wing, such as on a parasol monoplane or the top wing of most biplanes, the root is that section of the wing that is intersected by a projection of the outline of the fuselage as seen in the top view, i.e. the root section would be 50 mm from the centreline of an exposed wing on a model aircraft with a 100 mm wide fuselage.

5.3.5.6 Engine(s)

Any Sports 46 size (7.54 cc) engines with a front intake and side exhaust, which is supplied with the standard manufacturers carburettor and silencer, having a retail price of no more than £80.00 inc VAT at 20% (2012 season). No modifications to the engines are allowed, all replacement parts must be from the same manufacturer as the engine. No mixing and matching of parts will be allowed. If in doubt ask the committee or CD.

5.3.5.7 Propellers and spinners

(a) The only propellers allowed are 10”x6” size from the following manufacturers Graupner 'G-sonic' part no. 1318.25.15, Radio Active Manufacturing part no. RAM2515 and APC part no. LP10060.

(b) A rounded nose spinner with a diameter of at least 25 mm and a nose radius of not less than 5 mm must be fitted. Propellers shall have a diameter, pitch, blade width, and blade aerofoil identical to that of the approved part numbers at every measurable station. The following modifications may be made without penalty.

(c) One blade maybe sanded on the top (front) side only for balancing.

(d) One side of the hub may be sanded for balancing.

(e) The shaft hole may be enlarged, but only as much as necessary to fit the engine crankshaft. The enlarged hole shall be concentric with the original hole.

(f) Edges and tips may be sanded, but only as much as necessary to remove sharp moulding flash.

5.3.5.8 Shut-off

The pilot must be able to shut off his engine, on the ground or in the air, by radio control within five seconds of command, irrespective of aircraft altitude. The radio system used to control the aircraft shall be equipped with a fail safe. This fail safe shall be set to shut off the engine if radio signal is lost.

5.3.5.9 Undercarriage

The undercarriage may have a two or three wheel design with the main wheels having a minimum track of 150 mm. The minimum diameter of the main wheels shall be 57 mm. The competitor must give the organiser the opportunity to check that measurement. A tail skid may be used in lieu of a tail wheel. A positive means of steering on the ground shall be provided; rudder control is acceptable. Retracting undercarriage is prohibited.

5.3.5.10 Fuel System

The fuel system may only be pressurized from the engine’s exhaust system. The fuel tank must be of conventional type, a fixed pick-up is allowed. No type of sack or bag to contain the fuel is permitted.

5.3.5.11 Technical checks and safety requirements

(a) At registration of the model aircraft before the competition, the Technical Officer may carry out technical checks either at his own discretion or at the request of another competitor to check if the models comply with the technical specifications. However, under all circumstances during the competition, it is the competitor’s responsibility to ensure that entire model aircraft complies with the technical specifications in 5.2.8.1 to 5.2.8.8.

(b) During the competition all measuring equipment will be at the disposal of competitors to check their model aircraft if they wish to.

(c) After a race, the Technical Officer may take any model aircraft for inspection. The Technical Officer may ask the competitor to empty the tank for weight checking and for analysis of the fuel. Where a fuel analysis is made, a sample of the contest fuel shall also be taken for comparison. If, after analysis of the fuel from the tank, this fuel appears to be different from the contest fuel, the competitor will be disqualified from the competition. If the fuel analysis result is not available during the competition then the disqualification may be applied retrospectively.

(d) If the model aircraft is not according to the technical specifications in 1.1.1–1.1.8, the competitor shall be disqualified from the competition.

(e) The Contest Director has the right to request any competitor to make a flight to demonstrate the airworthiness of his model aircraft.

(f) Safety inspections of all aircraft before or during registration and at random as a pre-flight check during the competition shall be conducted by the contestant under the supervision of the Technical Officer. The list of safety checks should include the following:

(i) Push/pull rods or cables, control horns, and servo leads shall be installed in such a way that they will not become disconnected in flight. Clevises shall be physically held closed by short pieces of fuel tubing or similar material. Metal clevises shall be protected from deterioration of the threads due to vibration by means of a lock nut, thread treatment such as Loctite ® or Vibra-tite ®, or a similar method. Ball links shall be tight.

(ii) All screws holding the engine to the mount and the mount to the firewall shall be in place and secure.

(iii) The radio receiver and battery pack shall be surrounded by soft foam rubber or other vibration dampening material and adequately protected against contamination by engine exhaust, raw fuel, or fuel residue.

(iv) Batteries shall be of adequate capacity for the size and number of servos used. Minimum battery capacity shall be: 500 milliamp-hours (mAh).

(v) Servos controlling the pitch and roll functions shall be of adequate strength for the weight and speed of the aircraft. Whenever a single servo is used to control one of these functions, it shall be designed and built to accommodate at least four mounting screws. When two or more servos are used together to control the same function, as in the case of dual aileron servos or the movable tail surfaces on a "v" tailed aircraft, each of said servos may be of the two-screw variety.

(vi) Control surfaces shall be firm on the hinge line without excessive play. Safety officers shall be alert to the danger of excessive play whenever electronic servo throw reduction is used in combination with a mechanically inefficient linkage.

(vii) All screws holding the servos to the servo rails or trays and holding any trays to the airframe shall be in place and secure. Rubber grommets shall be used on all servos designed to accept them. If the heads of the servo mounting screws are small enough to pull through the grommets, washers shall be used to prevent this.

(viii) Pushrods shall have only one threaded end that is free to turn. The other end shall consist of a "Z" bend, an "l" bend with keeper or collar, a metal clevis that is soldered on, or a threaded ball-link that is glued or otherwise secured so that it cannot turn.

(ix) Wings, if removable, shall be securely attached to the fuselage with bolts or machine screws.

(x) Wheels shall be securely attached and shall turn freely.

(xi) The aircraft shall be free of stress cracks and any other indications of structural damage.

(xii) Proper functioning of the engine shut-off by fail safe.

If a model aircraft does not comply with the safety items during a pre-flight check, the Technical Officer will not allow it to fly in the race.

5.3.5.12 Competitors

(a) A race team shall consist of a pilot an a caller. All pilots must be accompanied by a caller for reasons of safety.

(b) In each race, the caller must release the model aircraft at the start and give the pilot verbal information regarding the flying course of his model aircraft and any official signals.

(c) Electronic communication with the pilot shall be prohibited.

(d) There will be no pilots' helpers at any of the pylons.

(e) The Contest Director has the right to request any competitor to make a flight to demonstrate his ability to fly the aircraft around the course.

5.3.5.13 Helmets

(a) All officials, competitors and callers on the racecourse must wear a crash helmet with a properly fastened chin strap. Helmets must be worn during practice and during the competition.

(b) During the competition, any pilot or caller not wearing an appropriate helmet will disqualify that team from the heat.

5.3.5.14 Fuel

(a) Fuel will be a composition that contains no more than 5% Nitromethane.

5.3.5.15 Race Course, Distance and Number of Rounds

(a) The race course is a triangle with sides of 40 metres, 180 meters and 180 metres, marked by 3 pylons. In this triangle a circle with a diameter of 20 metres is specified, wherein, for reasons of safety, all pilots, callers and the Starter have to stay during a race.

(b) For the race course lay-out, see Figure 1. The race course specification may be modified in the interest of safety or to suit existing field conditions if as long as safety is not compromised and subject always to strict compliance with rule 1.1.15(a).

(c) Figure 2 gives guidelines for the lay-out and organisation of the flying site in order to achieve maximum safety for competitors, judges and spectators.

(d) The pylons should have a minimum height of 4 m and should not exceed 5 m in height.

(e) The race is over 10 laps with an individual nominal length of 400 m and total nominal flying distance of 4000 m.

(f) The race starts at the start-finish line. The race is terminated at the start -finish line 10 full laps later.

(g) The number of rounds will be announced by the organiser before the start of the competition with a minimum of 3 and a maximum of 15. Because of weather conditions or other important reasons, the number of rounds may be reduced during the competition.

5.3.6 Club 2000 Pylon Racing Rules

(Originated by the Club 2000 Association)

5.3.6.1 Aims

To provide at a reasonable cost, closed circuit pylon racing between individuals or teams for the club sports flyer.

5.3.6.2 Airframe specification

(a) Models: Delta Wing aircraft are not permitted.

(b) Fuselage:

(i) The motor bulkhead shall be a minimum of 2.1/4” x 2.1/4”, measured vertically and horizontally.

(ii) Cross section measured at the wing trailing edge shall be a minimum of 2.1/4” x 2.1/4”, measured vertically & horizontally.

(iii) The fuselage at the deepest point shall measure a minimum of 2.1/4” wide x 3.1/4” deep, this to include the wing section and shall occur somewhere between the wing cord.

(iv) Wing fairings or fillets are not allowed.

(v) Maximum radius of the fuselage corners will be 1/4".

(c) Wing:

(i) The wing shall have a minimum span of 35" (889mm) and shall be of constant cord

(ii) The minimum wing thickness shall be 7/8" (22.225mm) for the 35" span.

(iii) The minimum wing area shall be 300 sq inches (193,548.0mm²).

(achieved for example: 8.5/8" x 35" (219mm x 889mm) or 8.3/8" x 36" (203.2mm x 914.4mm)

(d) Tailplane:

The model must use a standard tailplane and vertical fin. Alternatives are V-tail and T-tail

(e) The use of carbon fibre in any shape or form is forbidden, with the exception of the use of carbon rod for the elevator pushrod.

5.3.6.3 Flying Controls:

The model will have a minimum of a proportional three channel radio, controlling ailerons, elevator and throttle.

5.3.6.4 Propeller:

The only allowable propeller for an IC powered model is a two blade Radio Active Manufacturing 9" x 6" and must not be modified.

5.3.6.5 Spinners:

The motor must be fitted with a rounded spinner nut or a 1.1/2" minimum diameter plastic spinner.

5.3.6.6 Weight:

The all up, ready to fly minimum weight, excluding fuel or battery shall be 2.1/4lbs (1020gms).

5.3.6.7 Motors

IC power. Any motor with a front induction, side exhaust and cylinder capacity not exceeding 0.25cu.in, from the following range is allowed:

ASP; SC; Irvine Mk 3; OS FX only

Note: The ASP/SC 25 is the only engine allowed to use the ASP/SC 32 carburettor silencer and which is supplied by Just Engines, within the "reasonable cost" bracket. All other engines must be as supplied "out of the box".

(a) Repairs to an engine internals are to be made using only manufacturers standard replacement parts. Where original manufacturer's standard replacement bearings are no longer obtainable, they may be replaced with an item that is from another manufacturer, providing that they do not exceed the original specification. Replacement of the engine carburettor and/or silencer, may be carried out using standard manufacturer's carb/silencer from other engines in the allowable range. No modification to these parts is allowed by brazing, welding or thread tapping/helicoil inserts (Rule amended 26/10/09) The latest ASP/SC engine may have the baffle removed from the silencer to improve performance in line with the other allowable engines (Rule amended 24/10/10)

(b) (i) No form of in-flight mixture control or fuel pumps are permitted.

(ii) Fuel tanks: Pacifier (bladder) tanks are allowed, otherwise only muffler pressure is allowed on a standard 2 or 3 pipe fuel tank.

(c) If any competitor suspects that a fellow competitor's engine or silencer has been modified (other than in 7a above) in any way, they may deposit £10 with the CD or his deputy. If the engine is found to be standard, this money will be forfeited, on the other hand, if the engine is found to be modified, the costs of the scrutineering will be presented to the offending pilot and he will forfeit all points awarded to him in that season.

(d) Only conventional threaded glow plugs are permitted.

5.3.6.8 Fuel IC power:

The use of glow fuel with a maximum content of 5% nitromethane, will be permitted for racing. The fuel is to be provided by the race meeting organisers and is to used by all competitors. No other fuel than that supplied in the official container, is to be used.

5.3.6.9 Race Course and Procedure

(a) Course Dimensions: Course size is 120 ft between base pylons and 380 feet from the base pylons to number 1 pylon. Start line to be 60 feet from the base pylons and centred in line with No. 1 pylon. Four launching positions will be marked at 15 feet intervals along the start line, centre to the course.

(b) The pylons should be a minimum of 15 feet high, surmounted by a 2 foot square flag, the top of the No. 1 pylon should be above the horizon if possible. A sighting pole is to be positioned adjacent to the No. 1 pylon at 90 degrees to the centre line of the course.

(c) The course layout is therefore a long triangle and should be set with the wind blowing from No. 1 pylon towards the base pylons. The course will be flown in an anti-clockwise direction. It is the responsibility of the contest director to ensure the accurate positioning of the pylon marshals relative to the flight path of the models.

5.3.6.10 Pylon Judging:

(a) All competitors are required to fly AROUND each pylon, therefore, pylon judges and flag men, are to ensure a complete circuit is made, except as in 10b below.

(b) At each base pylon, one judge shall stand directly under the flag, to determine whether or not a "cut" has been made. The other pylon judge/judges, will identify which model has made the cut. A cut will be indicated by a blast on a sound device, followed by a cut shown on the indicator board against the offending flyer.

If a model hits any part of a pylon, excluding the flag, then a cut will be awarded and the race will be stopped for inspection of the model and pylon. The cut will stand for the subsequent re-run.

If the pylon FLAG ONLY is stuck and the model and flag are unaffected, no cut will be awarded and the race may continue.

If the FLAG ONLY is damaged, the race will be stopped for inspections and repairs to the flag, but no cut will be awarded.(Rule Amdt 13/5/12).

The flag men at No. 1 pylon will indicate a cut, by waving their flags above their heads from side to side. No. 1 pylon flag men are to ensure that the model has passed the pylon/sight board line, before dropping their flags. Once a No. 1 flag man has dropped his flag, he may not award a cut under any circumstances.

Cut boards, will be used at the No. 1 pylon, on the first cut, the pilot's coloured board is turned over to expose a black and white cut indicator. If that pilot cuts again at No. 1, the flag man will stop flagging and place the cut board on the ground.

For semi finals and finals there should be four flag men positioned on the No. 1 pylon and four judges on each of the base pylons.

(c) Timekeeping: Time keepers will be situated in a straight line facing No 3 pylon, adjacent to the trailer and the race time will be taken from the drop of the starter's flag, until the tenth lap, when the model is in line and passing No. 3 pylon. A pilot cutting a pylon (flying inside), will have ten percent of the 10 laps time added to their overall time, except in a final, when 11 laps will be flown.

(d) A launcher and model, must be behind the start line when the flag drops for the start of the race, otherwise one cut will be awarded against the pilot. If a launcher is adjudged to have launched the model before the starter drops the flag, then one cut will be awarded against the pilot. Two cuts in any race, will cause the pilot to be disqualified from that race and told to pull out. Pilots should be informed of their cuts during the race.

(e) When an officially acknowledged timing, flagging or any administrative error takes place, only the competitor directly involved will be given a re-run. Where a dispute exists on lap counting, flagging or timing errors, the competition directors decision is final. If the competition director is flying in a particular round, he must delegate his responsibilities whilst he is flying.

5.3.6.11 Start Positions:

(a) Normally, a competition matrix will ensure that pilots will rotate along the start line positions throughout the competition rounds. The qualifiers in each semi final or final will choose their own positions on the start line, accordingly to their qualifying times, ie: fastest qualifier has first choice, second qualifier second choice and so on.

(b) Model frequency control will be carried out by the starter, who will clarify each of the pilot's models frequencies before switching on.

(c) The competitors will identify their models to the pylon judges, switch on their radios and check correct operation of their models when told to do so by the starter.

5.3.6.12 Starting Procedure:

(a) The race will consist of a maximum of four competitors flying 10 laps of the course. Models will be hand launched from behind the start line. One minute will be allowed for starting engines, although the starter may commence the race if he is satisfied that all competitors are ready to launch, before the one minute time limit has elapsed.

(b) A total of 5 minutes will be allowed for the race, any pilot who does not land his model within this time will be disqualified. A model must not be launched or re-launched after a period of 30 seconds from the start of the race. Failure to achieve a launch within this time disqualifies the competitor from that race and any subsequent re-run of that race.

(c) Competitors may only retrieve their models after the race has finished and all models have landed. Pilots and their callers must stand behind the start line at all times and in line with their allocated start position marker during the race. Models are not to be flown between the base pylons at any time.

5.3.6.13 Mid-air Collisions:

(a) In the event of a mid-air collision or pylon strike, (Rule amended 24/10/10) all models in that race are to land immediately for inspection. All pilots involved will have a re-run, which will take place at the end of the round in which the mid-air occurred. Any cuts awarded prior to the mid-air will stand for the subsequent re-run.

(b) If the mid-air collision occurs after one or two competitors have completed 10 laps, then their finishing time/position shall stand. If this situation arises in a semi-final, or final, those competitors involved in the mid-air shall be deemed to have finished behind those who completed the race and shall “fly off” for the remaining places.

(c) If a pilot suspects a mid-air collision, he should notify the contest director and pull out. The model will be inspected immediately on landing, if the model is found to be damaged as a result of the mid-air, the pilot(s) concerned may have a maximum of 15 minutes to repair or prepare another model for a re-run.

(d) Trimming/Check Flights: At the CD’s discretion, competitors may be allowed a flight to ensure the safe flying characteristics of a model, which has not been used during the meeting or subject to a mid-air. No such check-flying shall take place until the course is erected and the agreement of the CD has been granted.

5.3.6.14 Dangerous Flying:

Low flying is consistent flying below pylon flag height, which endangers all concerned. The CD may give a competitor a warning for low flying, if the competitor continues to low fly, the CD shall disqualify that competitor from that heat. The initial warning counts for all the following heats, semi- finals and finals. At the CD’s discretion, a competitor may be disqualified from the heat or the event, if it is adjudged that he is flying dangerously.

5.3.6.15 Engine Checking:

At the end of every meeting, one of the 12 group finalists, will be randomly selected by lottery, to remove cylinder head, liner and venturi for inspection by three selected examiners. Any engine that has raced on the day, may be selected by the examiners for full scrutiny.

5.3.6.16 Model Processing:

All models which are to be flown in the semi-finals and group finals, will be checked prior to these races. When a model is processed and the airframe is shown to be within the

dimensional requirements of the rules the airframe is to marked to eliminate further processing the airframe.

5.3.6.17 Qualifying Times:

In groups one and two the 8 fastest competitors with the lowest qualifying times will then fly in 2 semi-finals, the fastest 4 will then fly in one final. In group 3, the 4 competitors with the lowest qualifying times will fly in one final.

If more than one competitor records a no time in the semi-finals, their progression shall be determined by their qualifying time. If more than one competitor records a no time in the final, the finishing positions shall be determined by their qualifying times.

The number of times to be taken into consideration for placing are as follows:

3 heats flown	best	2 to count	4	"	2 to count
5	"	3 to count	6	"	4 to count
7	"	4 to count	8	"	5 to count
9	"	6 to count	10	"	6 to count
11	"	7 to count	12	"	8 to count

5.3.6.18 Groupings

(a) All new members will start in group 3 and progress through to groups 2 and 1, once they have achieved qualifying times. No one may be demoted to group 3 once they have attained group 2 or group 1 qualification.

(b) Group 2: Members who have achieved a four heat qualifying time of less than, or equal to 340 seconds in the current season or the previous season.

(c) Group 1: Members who have achieved a four heat qualifying time of less than or equal to 296 seconds in the current season or the previous season. (Amended 20.10.13)

(d) The four heat qualifying time means the aggregate of the four fastest heats. The end of any current season is the date of the annual general meeting. Members may be demoted at the end of the season, if they have not achieved the above four heat qualifying time.

(e) At every championship meeting, each group winner is awarded 8 points down to 1 point for 8th position. In addition, 1 point will be awarded to the competitor with the fastest time of the meeting in each group (Rule amended 24/10/10). The points obtained in the same ratio as laid down in para. 17 above, are added together at the end of the season to determine the competitor's championship position. If two or more competitors tie on the points for first place or any of the group championships at the end of the season, then the competitor with the most wins in the relevant group will be awarded first place. If a tie still occurs, then the competitor with the most second places in the relevant group will be awarded first place and so on until a tie no longer exists.

5.3.6.19 Abandonment

The Competition Director has the authority to abandon a meeting, if he considers that the weather makes it dangerous to continue. If all entrants have had at least three races and the meeting has been abandoned, the results of these races will be used to determine the competitor's final placing.

In the event that the semi-finals and/or finals are not completed due to the meeting being abandoned, these will be completed at the next meeting.

Should this occur at the last meeting of the season, then they will be completed at the first meeting of the new season and the final Championship positions determined as soon as possible thereafter.

5.3.6.20 Miscellaneous

(a) Protective headgear must be worn at all times by ALL persons in the flying area.

(b) No competitor may fly any model that has previously been flown by another entrant at the same championship, or National meeting.

5.3.6.21 Interpretation of the rules:

Any interpretation of these rules will be at the discretion of the acting CTA Committee, whose decision will be final.

5.3.7 Club 2000 Open Class – Additional Rules.

Rules and race procedure regulations for this class are identical to Club 2000 but allow the use of an electric power train. The additional rules to include this alternative means of power are as follows.

5.3.7.1 Propeller: Add the following paragraph to 5.3.6.4

The only allowable propellers for an electric powered model is a two blade Radio Active Manufacturing 8" x 6" or APC 8"X6" and must not be modified.

5.3.7.2 Electric power: Add the following paragraphs to 5.3.6.7

(f) Batteries – Any battery may be used, with a maximum of four cells and that, including any attached wires and connectors, does not weigh more than 270 grms

(g) The only motors permitted will be :

Turnigy SK3536-1400kv Aerodrive XP Outrunner.
Overlander Thumper V2 T 3536/5 1450 KV
NTM Prop drive series 35-36A 1400KV

(h) Motors may not be tuned or modified to increase the performance and can only be repaired using standard replacement parts.

(i) The motor must be capable of being throttled on demand.

(j) Speed controller choice is free

5.3.8 Quiet Quickie 500

5.3.8.1 Objectives

To provide a pylon race event using a model/engine combination that can be used on any club's power flying site. The airframe specifications are the same as the Quickie 500 classes that are popular in many other countries.

5.3.8.2 General

The model must be of conventional design with forward wing and aft empennage. The engine and mount must be fully exposed. No cowling or streamlining of the engine is permitted. The model must be equipped with four separate radio channels to independently control engine carburettor, roll, pitch and yaw.

5.3.8.3 Fuselage

The fuselage shall be a basic rectangular box section with a minimum height of 3.5 ins and a minimum width of 2.875 ins. The minimum dimensions must occur within the wing

chord. Minimum width does not have to occur at the same point as minimum height. Diamond shaped cross sections are not acceptable. Canopies, turtle decks and fairings are acceptable but will not be considered when testing for minimum dimensions. All fuselage corners must have a radius of 0.25 ins or less. Wing fillets or fairings or any type of radius between fuselage and wing are not allowed. The front firewall must be a rectangular flat plate with minimum dimensions of 2.25 ins x 2.25 ins.

5.3.8.4 Wings

The wings shall have a constant chord with a minimum area of 500 in2. The overall span shall be between 50 ins and 52 ins, measured from wingtip to wingtip. The minimum wing thickness shall be 1.1875 ins for at least 47.5 ins of the span.

5.3.8.5 Landing Gear

The landing gear must be two wheeled and fixed, with two wheels each having a minimum diameter of 2.25 ins. Wheels must be at least 8 ins apart measured parallel to the wing span. Strut fairings and wheel pants are not allowed.

5.3.8.6 Weight

The model shall weigh a minimum of 3.5 lbs without fuel.

5.3.8.7 Engines

An unmodified Irvine Q40 with manufacturers standard supplied silencer and carburettor is the only permitted engine. Only original manufacturers replacement parts may be used for repairs, with the exception of screws, glow plug, gaskets, prop washer, prop nut and backplate mount (if used for mounting the engine.

5.3.8.8 Propellers

Only two bladed, fixed pitch, fibre filled nylon propellers may be used. Propellers must be commercially available in the UK and must have a diameter of at least 9”. Propellers must not be modified, except that the upper surface of one blade may be reworked for balancing purposes only.

5.3.8.9 Fuel

As for Sport 40, i.e. approximately 5% nitromethane, 20% castor oil and 75% methanol. Fuel will be supplied by the organisers of the event and must be used by all competitors.

5.3.8.10 Race Course and Procedure

The race course, procedure and scoring will be the same as that for Sport 40.

5.3.8.11 Model Processing

The contest director or his nominee may elect to check any or all models for compliance with the rules. Any model failing processing will not be prevented from flying at race meetings for practice purposes but may not take part in competitions until the problem is resolved.

5.3.9 Class Q500E (Quickie 500 Eurocup)

5.3.9.1 Definition

The regulations of the "FAI Sporting code section 4 - Aeromodelling volume F3D radio control Pylon racing" have to be used, unless this document specifically indicates otherwise.

The term “commercially available for everyone“ means, that an identical product can be obtained within 6 weeks, after placing the order, by any consumer at a price that is independent of who the consumer is. All prices listed are without value added tax. For international orders these prices are without import tax.

5.3.9.2 Technical Specifications

Only model aircraft of conventional design powered by a single engine are allowed, with a box section square fuselage, one forward wing and one aft stabilizer; the design of the stabilizer is free.

A model aircraft shall be considered a tailless aircraft, if the ratio of its wingspan to its overall length is greater than 2:1. The “overall length” of the aircraft, for purposes of this measurement, is the distance from the front of the propeller to the trailing edge of the rearmost movable tail surface. The aircraft doesn’t need to have the general lines of a full size aircraft.

The Engine and engine mount must be attached on the front of the fuselage. No cowling or streamlining of the engine or silencer is permitted. The silencer must not be inserted into the fuselage.

5.3.9.3 Drive train

5.3.9.3.1 Motor

The Motor shall have only one front-intake, and one side-exhaust. A supercharged engine, i.e. a compressor or turbo engine is not permitted. Only glow plug engines are permitted.

5.3.9.3.2 Motor Shut-off

The motor shut-off function must be a separate function. Remote mixture control is not allowed.

5.3.9.3.3 Silencer

(a) Primary Silencer

Tuned pipes are not permitted. A primary silencer shall also be considered a tuned pipe, if its overall length is more than 260mm. This overall length is measured from the middle of the glowplug through the centre line of the primary silencer system to the end of the primary silencer system.

If the tank is pressurised, only the pressure coming from the silencer may be used. Other pressure producing systems are not allowed.

(b) Secondary Silencer

secondary silencer as described in Annex 5P (Volume F3D) may be used. The secondary Silencer shall not be included in the measurement of the pipe length of the primary silencer.

5.3.9.3.4 Propeller

The propeller shall have a minimum diameter of 222,2 mm.

Only propellers which are “commercially available for everyone“ shall be used.

The maximum price for a propeller is 7 EUR. The dimensions must be indicated on the propeller by the manufacturer.

The propellers must be manufactured in an injection moulding process.

Homemade propellers are not permitted.

The recommended RPM limit given by the manufacturer must not be exceeded during flights.

Changes to the propeller blades are not permitted. For the purpose of balancing, changes shall be done to the thickness of one blade only. (Removal of material/mass).

Edges and tips may be sanded, but only as much as necessary to remove sharp moulding flash (deburr).

5.3.9.3.5 Propeller Spinner

The maximum diameter is 35mm. A minimum diameter is not required.

The spinner must be rounded at its front, the minimum radius is 4,5mm.

The spinner may be made of metal only.

5.3.9.4 Fuselage

5.3.9.4.1 Cross section

The fuselage shall have a rectangular cross section over the whole length.

The fuselage sidewall shall be parallel to the vertical axis of the model aircraft.

A maximum radius of 6,5mm is permitted for the corners of the fuselage.

Within the wing chord there must be a minimum height of 89 mm and a width of 73 mm. At the point of measurement for fuselage height, the wing profile thickness shall be considered as part of the height. Width and height points need not to be at the same point.

A minimum cross sectional area is not prescribed.

Canopies and turtle decks are acceptable but shall not be included in width or height measurements.

The front firewall shall be a rectangular, flat plate measuring at least 57 mm by 57 mm.

5.3.9.4.2 Fairing

Fillets or fairings between the fuselage and wing are not permitted.

5.3.9.4.3 Landing gear

Only a non retractable landing gear is permitted.

The landing gear shall be fixed on the outside of the fuselage or the main wing. The minimum track of the main wheels is 177,5 mm.

Wheel fairings, i.e. Wheel pants, or fairing between the landing gear and fuselage, i.e. Fillets or similar, are not permitted.

Nose or tail wheels, if used, may be streamlined.

5.3.9.5 Main wing

5.3.9.5.1 Surface Area

The main wing must have a rectangular layout over at least 1206,5mm. Total area of the main wing must be at least 32,258 dm² (500 sq-inches).

The area of the aft stabilizer does not enter the calculation of the minimum surface area.

5.3.9.5.2 Wing span

The wing span must be a minimum of 1270mm and a maximum of 1320mm.

5.3.9.5.3 Wing thickness

Wing thickness must be at least 30,15mm over a wingspan of at least 1206,5mm.

5.3.9.6 Weight

Weight less fuel, but including all equipment necessary for flight must be at least 1700 g

5.3.10 E2K Electric Pylon Racing

5.3.10.1 Fuselage

1-1 The motor bulkhead shall be a minimum of 2 1/4" X 2 1/4" (57.15mm x 57.15mm) The motor can be mounted directly on to the bulkhead or onto the bulkhead via 4 parallel standoff pillars to assist with achieving the correct C of G. These pillars can be up to a maximum of 80mm long and 15mm diameter.

1-2 Cross section measured at the wing trailing edge shall be a minimum of 2 1/4" X 2 1/4" (57.15mm x 57.15mm).

1-3 The fuselage at the deepest point shall measure a minimum of 2 1/4" wide X 3 1/4" (57.15mm x 82.55mm) deep, including the wing section and shall occur somewhere between the wing leading and trailing edges.

1-4 Wing fairings, fillets or motor cowlings are not allowed.

1-5 Maximum radius of the fuselage corners will be 1/4" (6.35mm).

5.3.10.2 Wing

2-1 The wing shall have a minimum span of 35" (889mm) and shall be a constant chord.

2.2 The minimum wing thickness shall be 7/8" (22.22mm) for the 35" (889mm) span.

2-4 The minimum wing area shall be 300 sq. inches (19.36dm^2).

5.3.10.3 Powertrain

3-1 Batteries – Any lipo battery may be used with a maximum of 4 cells.

3-2 The only motors permitted will be:-

Turnigy SK3-3536-1400kV Aerodrive XP Outrunner,
Overlander Thumper 3536/05 all versions,
NTM Prop drive series 35-36A 1400kV.

3-3 Motors may not be tuned or modified and can only be repaired using standard replacement parts except as stated at paragraphs 3-7 and 3-8..

3-4 The motor must be capable of being throttled on demand.

3-5 The motor must be fitted with a rounded spinner nut or a 1 1/2" (38.1mm) minimum diameter plastic spinner.

3-6 The only permitted speed controllers are those that have been flashed to limit the rpm to no more than 15,232 rpm. Flashed speed controllers are currently available from the C2000 Association.

3-7 In the interests of safety the excess of the motor shaft can be ground off the rear of the motor.

3-8 As an economic repair scheme, the prop driver casting can be secured to the magnet housing by the use of a maximum of 4 small bolts.

5.3.10.4 Propeller

4-1 The only allowable propeller is the APC 8x8 propeller. Changes to the propeller blades are not permitted. For the purpose of balancing, changes shall be done to the thickness of one blade only. (Removal of material/mass). Edges and tips may be sanded, but only as much as necessary to remove sharp moulding flash (deburr).

5.3.10.6 Radio

6-1 The model will have a minimum of three channel radio controlling ailerons, elevator and throttle.

5.3.10.7 Materials

7-1 With the exception of the elevator pushrod, the use of carbon fibre is not allowed anywhere within the model.

5.3.10.8 Weight

8-1 The minimum weight of the model shall be no less than 2.25lbs (1022g) and a maximum weight of not more than 3.75lbs (1705g) ready to fly.

E2K Race Procedure

5.3.10.9 Course Dimensions

Course size is 120 ft (36.576Mtrs) between base pylons and 380 ft (115.824Mtrs) from the base pylons to the No.1 pylon. The start line is to be 60ft (18.288Mtrs) from the base pylons. The four launching positions will be marked at 15ft (4.572Mtrs) intervals along the start line centre to the course. The pylons should be a minimum of 15ft (4.572Mtrs) high and surmounted by a square flag, the top of the No1 pylon should be above the horizon if possible. A sighting pole is to be positioned adjacent to the No.1 pylon at 90 degree to the centre line of the course. Up to four timekeepers will be used and will be responsible for the recording of the race times. Up to four flag marshals will be used to indicate when a model has reached No1 pylon. These marshals are also responsible for reporting any No1 infringements. A minimum of one pylon judge per pylon will be employed to report any pylon infringements at No's 2 and 3 pylon. Course layout is therefore a long triangle and should be set with the wind blowing from the No1 pylon towards the base pylons. The method of flying the course will be anti clockwise. It is the responsibility of the contest director to ensure the accurate positioning of all pylon marshals relative to the flight path of the models.

5.3.10.10 Midair Collisions

In the event of a midair collision all models in that heat are to land immediately, all participants involved will have a re-run that will take place at the end of the round in which the collision took place. A maximum of 10 minutes will be allowed for preparation time to allow competitors to prepare a spare model for the re-run.

5.3.10.11 Starting Procedure

The race will consist of a maximum of four competitors and will be of 10 laps distance. Following the identification process a 2 minute readiness time will be allowed on the start line to prepare the model for flight. The starter will signal the start of the race with the drop of a flag whereby all models in that heat will be launched simultaneously. No model is to be launched after the leading model has completed the first lap. Should any model crash or not get away it is not to be retrieved until the end of the race. Pilots and callers must stand behind the start line at all times during the race.

5.3.10.12 Timekeeping

A timekeeper, equipped with a stopwatch will be allocated to each competitor during the model identification process. The model is to be launched from behind the start line. Any model deemed to have been launched prematurely or forward of the start line will be subject to a 10% time penalty (which will count as 1 cut) being added to the total time. Any pilot causing his model to cut inside a pylon will have a 10% time penalty added to his time. Two cuts in the same heat will result in that pilot being disqualified from that

heat. Should any dispute arise regarding lap timing / counting or flagging errors the Competition Director's (CD) decision will be final.

5.3.10.13 Dangerous Flying

Low flying is consistent flying below pylon height. The CD may issue a warning for low flying, if the competitor continues to fly low, in subsequent heats, the CD reserves the right to disqualify the perpetrator from that heat or the meeting.

5.3.10.14 Model Processing

The CD reserves the right to check, or have checked, all models for all aspects of compliance with these regulations. Any model found to be outside the rules will be disqualified. Any competitor who has raced a model that has subsequently been checked and found to be outside the rules will be excluded from that heat. The offence of exclusion will carry the application of a maximum time penalty. Any heat from which a competitor has been excluded cannot count as a dropped score and will count towards the final score.

5.3.10.15 Protective Clothing

All competitors, helpers, timekeepers, flag marshals and race officials are to wear hard hats at all times whilst racing is in progress.

5.3.10.16 Number of Heats Flown

To account for weather conditions and other possible interruptions to the raceday programme the number of heats that will count towards final scores will be as following:

Number of Heats Flown	Number of Heats Counting
3	2
4	2
5	3
6	4
7	4
8	5
9	6
10	6
11	7
12	8

5.3.10.17 Scoring

The pilot with the lowest total time from the number of heats flown will be deemed to be the winner of the event. If numbers and time permits two semi finals and a final will be flown to decide the top eight positions. League points will be awarded in descending order from 8 down to 1 for the top eight competitors.

5.3.10.18 Insurance / Affiliation

All competitors are to be members of the BMPRA and are to be in possession of BMFA insurance.

5.4 HELICOPTERS

5.4.1 General

5.4.1.1 Model Weight

The maximum weight of radio controlled helicopters shall not exceed 6.5 kg with fuel

5.4.2 BMFA Variations on F3C Helicopter

Note: The FAI Sporting Code for the F3C class rules can be downloaded at www.fai.org/ciam-documents or obtained direct from BMFA Head Office

5.4.2.1 Scrutineering and Noise testing

At UK domestic events, scrutineering and noise testing will be done as the CD decides and will normally only be done if concern is expressed about any particular model or where local rules apply.

5.4.2.2 Local Rules

Local rules may apply to any UK contest and will be notified to the competitors by the CD prior to the start of the contest.

5.4.2.3 One Day Contests

The normal programme will consist of four rounds of the 'A' schedule with the best three rounds scoring.

At the CD's discretion , and after discussion with the pilots prior to the start of the contest, one of the rounds may be replaced by a 'B' schedule.

5.4.2.4 Multi Day Contests

A full schedule of four 'P' rounds and three 'F' rounds will be flown if possible.

5.4.2.5 Judges

The normal complement of judges for a UK domestic event will be three but this may be altered at the CD's discretion.

5.4.2.6 Contest Director

The Contest Director for each event will be appointed by the Specialist Body.

Any queries or protests concerning the contest must be taken up only with the CD.

If a protest is not settled to the protester's satisfaction by the CD then the BMFA General Rule 2.3.9 shall apply.

5.4.2.7 Team Trials

Details and dates for the F3C Team Selection competition(s) run by the AHA will be published on the BMFA and AHA websites. Team selection competitions shall not be arranged (or re-arranged) to clash with any other competitions, either at home or abroad, at which team members would normally take part.

The F3C Team Selection competitions will use the current FAI 'P' schedule only. The AHA will aim to organise two BMFA Team Selection competitions per year depending on the availability of dates and / or venues but a minimum of one event will always be run. If two competitions are run, then the lowest normalised score for each pilot from the two competitions will be dropped to give a final (highest) normalised score for each pilot from

both events. In the event of a draw, then the pilot with the highest dropped score will finish above the other.

The F3C team selection competitions will determine the British Team to represent the UK (GBR) at the European and World FAI Championships. The top 3 scoring pilots will be formally offered a place on the British Team and if accepted will be recommended to the BMFA as the GBR Team. If one or more of the top 3 pilots decline their team place or are unavailable for the dates of the Championships then the next highest placed pilot will be offered a place until all places are filled or there are no more pilots from the team selection competitions. A reserve team member will be selected from the next highest placed pilot in the team selections competitions that is willing to accept a reserve place in the GBR team.

There may be a fourth team member as long as he or she is a junior according to the FAI Rules and can only be accepted if he or she is accompanied to the Championship by a parent or guardian.

5.4.3 BMFA Variations on F3N Helicopter

BMFA variations are the same as F3C with the following exceptions:

5.4.3.1 One Day Contest

The normal programme will consist of four rounds (Sets, Freestyle, Sets, Music Freestyle) with the best three rounds scoring. Any pilot scoring less than 65% of the top pilot's score will be deemed as being in the F3N Sport Class.

5.4.3.2 Multi-Day Contests

A full schedule of four Preliminary Rounds (Sets, Freestyle, Sets, Music Freestyle) and three Final rounds (Sets, Freestyle, Music Freestyle) will be flown if possible.

5.4.3.3 Judges

The normal complement of judges for a UK domestic event will be five but this may be altered at the CD's discretion.

5.4.3.4 Team Trials

F3N team trials will consist of two rounds consisting of a one day contest and the BMFA Nationals, the dates of which will be announced at the beginning of the year. The scores from both contests will be added together to give the final result.

5.4.4 European Sportsmans Helicopter

5.4.4.1 Object

To provide a competition class that will encourage pilots with a range of abilities to compete on an equal standing

5.4.4.2 General Rules

5.4.4.2.1 The general rules of the competition shall be as for F3C FAI Helicopter with the following alterations. Where confusion exists, these alterations shall take precedence.

5.4.4.2.2 The decisions of the specific event Contest Director (CD) are final.

5.4.4.2.3 The competition is open to all pilots and types of model helicopter / engine combinations and to all pilots, excepting those pilots who have flown at a centralised F3C event in the previous 24 months.

5.4.3.2.4 Interchange of judges during a competition is only permitted between round so as to maintain consistency of scoring.

5.4.4.2.5 During the flying the judges are out of bounds to all except the CD, the score sheet collector and the caller of the next pilot.

5.4.4.2.6 Judges should know the score requirements as defined in the latest issue of the European Sportsmans schedule.

5.4.4.2.7 All manoeuvres are marked out of 10 points. Points are lost as decided by the individual judge in accordance with the current rules.

5.4.4.2.8 Dangerous Flying

Any flying that is deemed to be dangerous will result in the round score being zero. This must be enforced to ensure that all pilots choose their schedules with care and fly them safely. Dangerous manoeuvres should be determined as:

(a) Flying behind the judge line at any time.

(b) Overflying the pits area or any other area designated as a no-fly zone.

(c) Any manoeuvre where the pilot is obviously flying to the limits of his ability and is not in full control of his model.

(d) A crash shall not be deemed to be the result of dangerous flying unless (c) above is applicable. A genuine accident or mechanical failure should not be punished.

5.4.4.2.9 Calling Manoeuvres

Each pilot should have a caller who should be well practised. The manoeuvre names should be called in the correct sequence, each followed by a call of ‘now’ when the manoeuvre is commenced and ‘complete’ when the manoeuvre is finished.

Manoeuvres only be marked by the judges between the calls of ‘now’ and ‘complete’. If the manoeuvre is not called, is called early, is called late or is called out of sequence then it should be penalised.

5.4.4.2.10 Pilot Position

All flying must be away from the judge line and the model must not be flown between the pilot and the judges. The CD may, however, allow this in very exceptional circumstances.

5.4.4.3 Flight Programme

The flight programme consists of:

(a) Two hovering manoeuvres, followed by

(b) Six aerobatic manoeuvres, followed by

(c) Landing

Every manoeuvre shall be marked out of 10 by each of judges, giving a maximum available round score of 270 points (top and bottom score removed if 5 judges present). At the discretion of the CD, Pilots are required to complete their own score sheets for each round. One copy should be retained by the pilot’s caller with the remaining copies handed to the judges immediately before the flight begins.

5.4.4.4 Schedule of Manoeuvres

1) TRIANGLE

MA ascends vertically from helipad to a height of 2m and stops. MA flies backwards and stops over flag 1 (2). MA ascends at 45° while simultaneously performing a 180° pirouette in either direction and stops over helipad. MA descends at 45° while simultaneously performing a 180° pirouette in either direction and stops over flag 2 (1). MA flies backwards and stops over the helipad. MA descends and lands in the helipad.

2) FLOWER

MA ascends vertically from helipad to a height of 2m and stops. MA ascends backwards while performing a quarter of a 5m radius circle and stops over flag 1(2). MA performs a quarter of a 5m radius circle while simultaneously a 180° pirouette in either direction to the helipad. Over the helipad the MA changes its pirouette direction performs a quarter of a 5m radium circle while pirouetting to flag 2 (1). MA descends backwards while performing a quarter of a 5m radius circle and stops over the helipad. MA descends and lands in the helipad.

3) CANDLE

MA flies straight and level for 10m and enters the manoeuvre by pulling up into a 10m (minimum) vertical ascent. MA performs a half pulled flip such that the first half occurs during the ascent and the second half occurs during the descent. MA goes into a vertical descent to same altitude as entry. MA continues for 10m to finish the manoeuvre. Note: MA must be horizontal at the top.

4) PULLBACK WITH HALF LOOPS

MA flies straight and level for 10m and pulls up into a vertical ascent after passing the centre line. MA performs a half backward loop. MA goes into a vertical descent to the same altitude as entry. MA continues for 10m to finish the manoeuvre.

5) DOUBLE TAIL TURN 540

MA flies straight and level for 10m and pulls up into a vertical ascent after passing the centre line with a 540° stall turn at the apex. MA flies a vertical descent, performs a half loop and flies to opposite apex with a 540° stall turn at the same altitude as the first stall turn. MA goes into a vertical descent and pulls out to the same altitude as entry. MA continues for 10m to finish the manoeuvre.

6) OVAL

MA flies straight and level for 10m and pulls up into a half loop after passing the centre line. At the apex MA flies inverted until the opposite apex is reached. MA finishes the loop to the same altitude as the entry. MA continues for 10m to finish the manoeuvre.

7) DOUBLE ROLLS

MA flies straight and level for a minimum of 10m and executes two consecutive rolls in either direction. The end of first roll and the start of the second must pass in the centre line. Manoeuvre is completed with 10m straight and level flight.

8) TAIL TURN

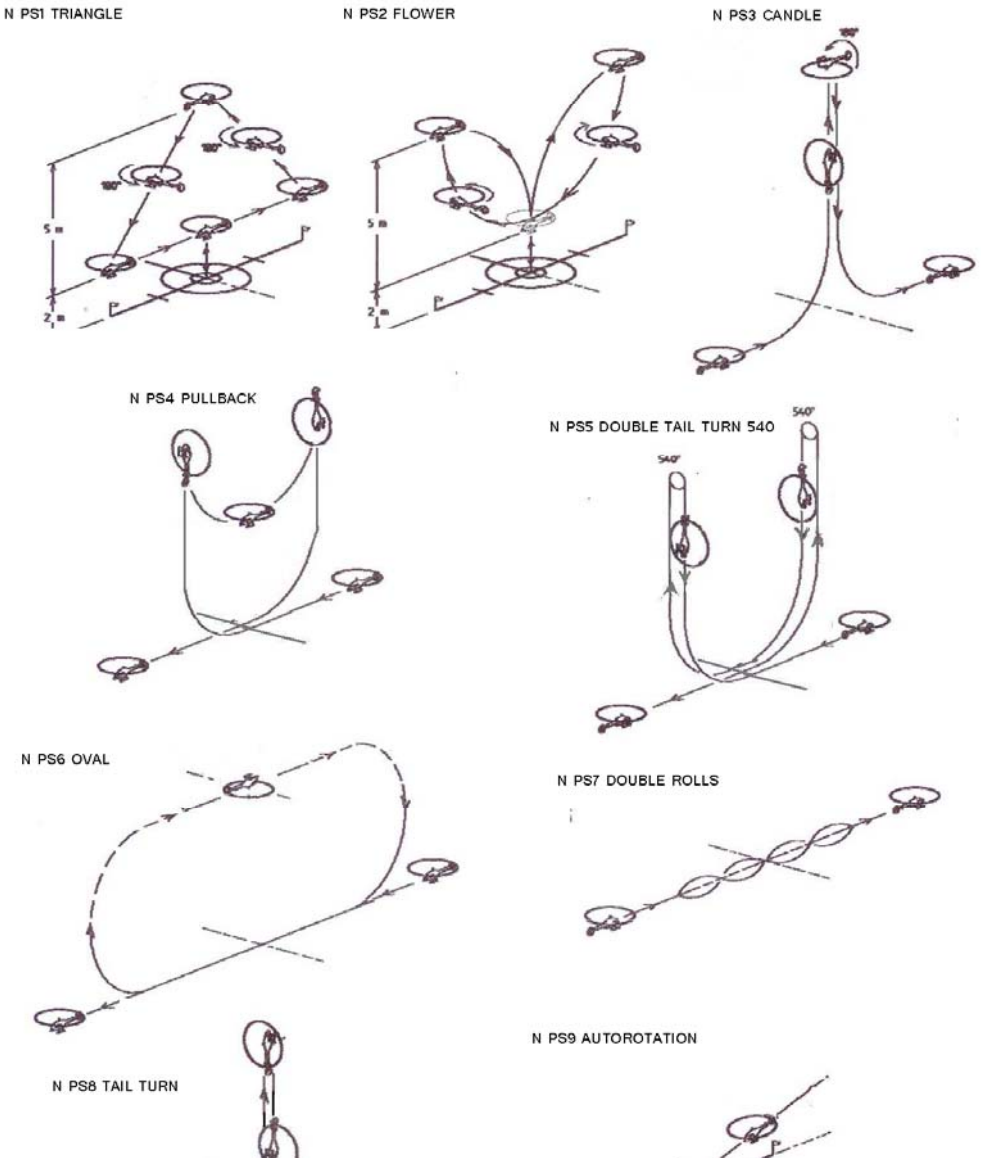
MA flies straight and level for a minimum of 10m and pulls up into a vertical ascent with a stall turn at the apex. MA performs a vertical descent with half roll. MA pulls out to the same altitude as entry. Manoeuvre is completed with 10mstraight and level flight.

9) AUTOROTATION

Model Aircraft flies at a minimum altitude of 20m. The engine power must be reduced to idle (or off) and descends to the helipad. Scores criteria for this autorotation landing (maximum score):

Rotor shaft points to inside 1 m circle: 10 points
Rotor shaft points to inside 3 meter circle: 8 points
Rotor shaft points in other cases: 6 points

DIAGRAMM SCHEDULE NEW PS



5.5 WATERPLANES

5.5.1 General

(a) In the case of scale or Schneider events, a tie will be decided on the static judging results.

(b) In non-scale events, a tie may be decided by static judging marks and/or marks for waterborne operation.

(c) All competition classes are open to powered, fixed wing models only.

(d) Schneider events are open to scale models of any aircraft which were built and prepared for any of the Schneider Trophy races, held between the years 1913 to 1931, even though they may not have flown in the actual contests.

5.5.2 Non-Scale Models

5.5.2.1 Static Marks

(1.1) Workmanship .....10 marks
(1.2) Finish.....10 marks

5.5.2.2 Static Flotation Test (2 minutes duration)

(2.1) Model attitude on water.....5 marks

Waterline on float not excessively low at bow or stern.

5.5.2.3 Waterborne Operation

(3.1) Navigability.....8 marks

Model taxied into wind, followed by turns of 90 degrees left and right of wind direction. The angle of turn may be reduced by the judges to take account of wind strength.

(3.2) Take-off.....12 marks

Controlled acceleration as model rises on to ‘step’, planes and lifts off smoothly with a steady climb-out.

(3.3) Alighting .....10 marks

Good approach with clean touch-down and minimum bounce.

5.5.2.4 Flight Test

(4.1) Smooth manoeuvring and control response .....8 marks

(4.2) Flight performance to display capabilities of the design.....12 marks

5.5.2.5 Competition Regulations

(a) Engines must be started within 5 minutes and model become airborne within 10 minutes of the pilot being called for his competition flight. Should the engine fail to start within the initial 5 minutes, one further start is permitted, provided 10 minutes time to airborne is still achieved. Failure to start, or exceed the 10 minute limit, counts as one attempt. One further attempt is permitted after all other competitors have completed their flight or first attempt.

(b) All pilots must announce their take-off after completing the navigability test. Non-announcement will result in the loss of the take-off marks.

(c) Failure to complete the flight will count as one abort. One further flight is permitted after all other competitors have completed their flights or second attempts..

(d) There will be only one caution for infringement of safety rules. A subsequent infringement on the same flight cancels all points scored for the flight section in that round.

(e) Two rounds will be flown but where two rounds cannot be flown (except where failures are as under (a) and/or (c) above) then first round results apply.

(f) Only models which are pre-entered will be allowed in the competition. No substitutions.

5.5.3 Scale Models

5.5.3.1 Static

(a) Documentation

The following documentation will be required:

(i) A three-view drawing of the aircraft reproduced from books or magazines, minimum 100 mm wingspan.

(ii) Three photographs of the aircraft, one to be of the actual aircraft being modelled, and proof of colour scheme.

(b) Judging

All items are to be judged from a distance of 3 metres.

(1.1) Accuracy of outline.....10 marks
(1.2) Craftsmanship.....10 marks
(1.3) Finish (colour and markings).....10 marks
(1.4) Realism.....10 marks

5.5.3.2 Static Flotation Test (2 minutes duration)

(2.1) Correct attitude on the water.....5 marks

As defined either by authentic photographs or drawings.

5.5.3.3 Waterborne Operations

(3.1) Navigability.....8 marks

Model taxied into wind, followed by turns of 90o left and right of wind direction. The angle of turn may be reduced by the judges to take account of wind strength.

(3.2) Take-off.....12 marks

Controlled acceleration as model rises on to ‘step’, planes and lifts off smoothly with a steady climb-out.

(3.3) Alighting .....10 marks

Good approach with clean touch-down and minimum bounce.

5.5.3.4 Flight Test

(4.1) Free style flight pattern, applicable to full size .....15 marks

5.5.3.5 Competition Regulations

All competition regulations are as section 5.5.2.5, Competition Regulations for Non-Scale Models.

5.5.4 Schneider Models.

Open to scale models of any aircraft which were built and prepared for any of the Schneider Trophy races, held between the years 1913 to 1931, even though they may not have flown in the actual contests.

5.5.4.1 Static

All static rules and marks are as section 5.5.3.1.

5.5.4.2 Static Floatation Test (2 minutes Duration)

Test and marks as section 5.5.3.2.

5.5.4.3 Waterborne Operation

All waterborne operations and marks as section 5.5.3.3.

5.5.4.4 Flight Test

(4.1) Flight realism.....12 marks

(4.2) Pylon turn.....8 marks

5.5.4.5 Competition Regulations

Competition regulations will be as section 5.5.2.5 with the addition of the following:

(g) Models are required to fly 5 continuous laps around the three legs of a 750 metre course. Each turning point will be flagged and if the model turns inside any pylon, a ‘cut’ will be called and that lap not counted. Two ‘cuts’ are allowed, with the flight not to exceed 7 laps.

For more details of the British Waterplane Association, a contact address is available from the BMFA's Leicester office.

5.6 SAM 35 VINTAGE R/C POWER COMPETITION CLASSES
Guidelines

5.6.1 Objective

All flyers should bear in mind that we are here to perpetuate the models and the flying of yesteryear. The objective of these new classes and rules is to revive the use of radio guidance; to enable gentle competition without the need to exceed flying field limitations; and to do so in a spirit of comradeship as most of our compatriots in the Free Flight and Control Line sectors do.

With variations in engine ran times for differing categories of model it is hoped to encourage models with modest performance to compete on level terms with out-and-out duration types.

5.6.2 Responsibility.

The Contest Director (CD) is responsible for the smooth running of competitions. Any queries should be directed to him or her directly.

5.6.3 Eligible Models

(1) Date.

The cut-off date for Flying Fives and Handicap Duration is 1st January 1960, i.e. original models must have been built and flown prior to this date. Designs published after this date but which were built and flown prior to the cut-off date are eligible. Onus of proof of this rests with the competitor. Therefore it is essential to have the appropriate documentation, e.g. a plan, magazine article, original dated photograph, all with dimensions, etc., with you.

(2) Types.

Models include Power, and, Electric and Glider in Handicap Duration, Power, up to 3.5cc in Flying Five.

(3) Prohibited accessories.

Any aids to performance such as flaps, airbrakes, DTs, turbulators, (interior or exterior), unless original.

(4) Scaling.

Models may be scaled up or down but must conform to the original outline, aerofoils, number of ribs, dihedral.

(5) Structural integrity

This shall be a high priority. Therefore, internal bracing, e.g., extra fuselage spacers/dihedral braces, unobtrusive sheeting, increases in spar sections or replacing balsa with stronger woods or ply, shear webbing, anti-warp bracing of any part, may be used. Externally, the use of plastic-coated steel trace as a 'flying' or 'landing' wire is to be encouraged, as are struts if necessary.

(6) Covering.

Materials should be of a texture corresponding to that of the original.

5.6.4 Builder of the Model Rule

In normal circumstances, the model shall have been built by the flyer, Exceptions to this are:

(1) The builder is incapacitated or no longer alive.
(2) Restored original models.
(3) A Proxy may fly models from abroad or from the U.K.

(4) Models may be loaned to overseas visitors.
(5) If a model has been built as a joint effort between two or more flyers, they may each fly it in the same competition but they only qualify for one prize.

5.6.5 Engines

(1) Handicap Duration

Engines are limited in capacity to that used originally and may be diesel, glow, or spark. For models scaled up or down from the original, engine capacity shall be pro rata e.g. a Junior 60 may have a 3.5ce diesel, 6cc spark or,.26cu.in. 4-stroke, for instance. For a Majestic Major (a Junior 60 scaled up approx. 1.5 times) a 10cc diesel or glow or, a 15cc spark engine would be appropriate, etc,

(2) Flying Fives

Engines are limited to a maximum of 3.5cc and may be diesel, glow, or spark.

(3) Silencing

For both classes, mufflers or silencers shall not be removed from any engine but may be modified for extra quietness. This includes most of the Cox range. Spark ignition engines should be silenced. Long 'quiet' silencers are permitted. Tuned pipes are not. All engines should comply with the DoE/BMFA noise emission requirements.

(4) Electric Motors and Batteries

Unlimited. It is felt at this time to be unnecessary, due to the weights involved, to impose any limits.

5.6.6 Attempts

One aborted flight per round is allowed. The second attempt will be scored. A flight can be aborted at any time during the motor run, but not after it has cut. For gliders, an attempt must be declared within 30 seconds of release from the towline.

5.6.7 Reserve Models.

Not allowed.

Note. The objective is to keep these competitions to the 'Spirit of SAM' and to be FUN to take part in; to allow anyone with any model a fair chance.

5.6.8 Crew.

All Classes: One helper/launcher required (for safety). May also be the timekeeper.

5.6.9 Height Limitations and Other Variables.

CDs shall ensure that flyers are made aware of any height limitations and ensure they are complied with. If necessary, the Contest Director may change any rule on the day, at his discretion and usually dependent on field and/or weather restrictions but, only to the benefit of all flyers and to this end. For example:

(1) Change engine run times.

(2) Use a 'rolling' maximum e.g., to increase the max time by one or two minutes per round. A seven-minute max would require the model to be down in nine.

(3) Adjust glider towline/bungee lengths.

5.6.10 Insurance and Certification.

Proof of insurance and, your BMFA 'A' certificate will be required at most competitions. Cheek with the organisers before travelling. Please note that although it is the

recognised route, you do not have to be a BMFA member to obtain a certificate. Host clubs must ensure that all flyers are made aware of club rules and field disciplines.

Any behaviour disregarding such rules or, any unsafe flying shall be discussed jointly by the club representative and the CD. The offender shall be warned to comply and may he requested to leave.

CLASSES OF COMPETITION

5.6.11 Flying Fives.

(1) 2 channels, rudder/elevator only. A third channel can be used for an engine cut-off if desired.

(2) 5cc of fuel only.

Note: Use of the cylindrical, coloured top, 5ec tank is an advantage. However, CDs shall be prepared and have a 5cc syringe available.

(3) Tanks shall not be topped up after a motor has been started, except for a fly-off when models may be launched simultaneously.

(4) 3 flights (rounds) x 5-minute maxes and an unlimited fly-off if needed.

(5) The model must land within a CD designated area within 7 minutes. Failure to do so will void the flight.

5.6.12 Handicap Duration.

(1) 3 channels, rudder, elevator, engine/electric motor or rudder/elevator only for gliders.

(2) Pylon and high performance types - 20 secs motor run.

'Sport' types - 75 secs motor run

Gliders - 100 metre (328ft) maximum line or, bungee with a maximum of 33% elastic element.

(3) 3 x 5 min. maxes and fly-off as Flying Five above.

(4) The Model must land within designated area within 7 minutes. Failure to do so will void the flight.

5.6.13 Spot Landing Guidelines

This competition often tempts those who would not normally dream of competing. Models, apart from gliders, must RoG. Flight limited to five minutes. Or, if the model (apart from gliders) is suitable, i.e., has a proper undercarriage and has RoG capability, an attempt at the spot/line may be made at the end of Flying Five or Duration flight. Distance from spot (or line, a piece of high visibility tape secured to the ground crosswind) measured by the CD from the nearest front wheel or towhook. 'Taxiing' is NOT allowed. Models must not be 'dived' on to the spot! Other than this it is up to the CD to explain the task. These guidelines give successful formats:

(1) Take-off or tow-up. Perform one horizontal eight. Cut (power models) engine. Land, stopping as close to spot/line as possible.

(2) Take-off or tow-up. Fly out of circuit. Enter into a rectangular circuit on the up-wind leg. Cut engine (power models) on the down-wind leg. Glide base leg and land.

5.6.14 SAM 35 Vintage/ Nostalgia Power Duration

5.6.14.1 Object :

To encourage the flying of nostalgic F/F power duration type models, flown with R/C assist which should only act as basic guidance and to facilitate landing within approximately 50 metres of the take off point. The event is for limited power run models flown to a maximum time and will consist of three classes.

5.6.14.2 Classes

Class 1	1 cc Max,	For instance, Cox 049 / 051 , MPJET, ED Bee etc
Class 2	3.5 cc Max	For instance, PAW 19, Torpedo 19, OS 19, AM 35 etc
Class 3	Open	

5.6.14.3 Models

(1) Models to have been designed & or published by the 1st Jan1961.

(2) Designs may be scaled up or down, with appropriate changes to material sizes. Rib spacing may be changed, but aerofoil section to remain as the original.

(3) Covering material. Solartex, Litespan, Airspan or any tissue type film is acceptable along with tissue, silk, nylon and any of the above over mylar. The use of modern self adhesive or other film type materials is discouraged and such models may only be flown at the discretion of the C.D.

(4) Motor size according to class. Only plain bearing crankshafts. No Schnuerle ported motors allowed.

(5) Motor run

Class 1	30 secs.
Class 2	20 secs.
Class 3	15 secs.

The C.D. is authorised to make alternative decisions on the motor run allowed on the day, considering prevailing weather conditions.

The motor run may be controlled either by radio or a clockwork timer,

5.6.14.4 Radio

ONLY 2.4 GHz is allowed. 27MHz or 35MHz is NOT allowed

5.6.14.5 Flights

One ‘no flight’ will be allowed per round, either as a result of an over-run, or a flight less than 30 sec.

Competitors are allowed 3 flights, each with a maximum depending on conditions. The maximum is to be set by the C.D. at the start of the event with the aim to have it set at around 4 or 5 minutes but the time decided upon will be to suit the prevailing weather conditions.

Aggregate score to count. If necessary a final fly-off round will be held.

A helper is allowed for starting and launching.

Note

Suitable designs

Class 1 Slicker Mite, Junior Mallard, Ramrod, Spacer, Starduster, etc.

Class 2	Slicker, Mallard, Zoot Suit, Creep, Dixielander, Y-Bar, Swiss Miss, Dreamweaver, Heatwave, Tototl, Ramrod 600 / 800, Spacer 600 / 800, Satellite 550 / 650, Starduster 600, etc.
Class 3	Super Slicker, Ramrod 1000, Starduster 900 Satellite 788GLH Satellite 1000 / 1300 etc.

5.6.15 SAM 35 Sport Nostalgia Power Duration

All rules of Vintage/ Nostalgia Power Duration will apply except:

Class 3 Open, will allow standard ball raced four stroke engines.

The motor run times will be-

Class 1 45 secs.
Class 2 30 secs.
Class 3 22.5 secs.

With the usual proviso that these may be altered on the day by the C.D. depending on the prevailing weather.

The models allowed must be genuine ‘sport’ type models and not the duration designs allowed for in Vintage/ Nostalgia Power Duration. The C.D.s decision on this matter will be final.

Note

Suitable designs

Tomboy, Hepcat, Matador, Outlaw, Ethereal Lady, Simplex, Black Magic, Southerner, Trenton Terror, Quaker Flash, Miss America, etc, etc.

However, any model that is essentially a duration model with a cabin (e.g. many American PAAloaders) will be categorised as a high performance model and NOT a sport model."

All enquiries to BILL LONGLEY on 01258 488833, or at **tasuma@btconnect.com**

5.7 FUN FLY COMPETITION

5.7.1 CLASS 1

5.7.1.1 Eligibility

The competition is open to all B.M.F.A members holding the B.M.F.A Achievement Scheme Power Fixed Wing B Certificate

5.7.1.2 Model Configuration

Any fixed wing model may be used weighing not less than 2 lbs up to a maximum of 11 lbs. It must be capable of taking off, landing and standing unassisted on its own fixed undercarriage of at least one main wheel.

Models must not be changed in configuration during the competition. There will be:

(a) No changing of wings or any other flying surfaces

(b) No changes in control surface area

(c) If a model is 'written off' during the competition, any substitute model must be of fundamentally the same configuration. The substitute model will only be allowed to be used at the CD's discretion.

(d) All IC engines should be fitted with an effective silencer. Tuned exhaust systems are permitted.

(e) Stability systems (gyros) are <u>not</u> allowed

5.7.1.3 Motive Power Limitations

IC Engine: Two Stroke: ..... Up to a maximum of 0.61 cu.ins
Four Stroke: ..... Up to a maximum of 0.70 cu.ins
Electric Motor: ..... Unrestricted

IC engines will be inspected at the CD's discretion.

5.7.1.4 Event Details

The competition will involve five events, as detailed below:

1 Longest Glide

2 Triple Thrash

3 Limbo

4 Touch & Go's

5 Mystery Round (Event randomly selected from the following: Deadstick Aerobatics, Blackjack, Touch & Go Bang and Roop). The mystery event will be decided on day 1 of the competition by a random draw.

5.7.2 CLASS 2

5.7.2.1 Eligibility

The competition is open to all B.M.F.A members holding the B.M.F.A Achievement Scheme Power Fixed Wing B Certificate. Competitors who in the previous year placed in the first 3 places of the overall class 1 competition will be excluded from entry into class 2. Any of the previous year's class 2 entrants are eligible to enter the following year apart from the overall class 2 winner who will be excluded from entry into class 2 for a period of a further 2 years. For example, the winner of Class 2 in 2020 cannot enter class 2 again until 2023

5.7.2.2 Model Configuration

Any fixed wing model may be used weighing not less than 2 lbs up to a maximum of 11 lbs. It must be capable of taking off, landing and standing unassisted on its own fixed undercarriage of at least one main wheel.

Models must not be changed in configuration during the competition. There will be:

(a) A maximum of four flight controls – Ailerons, Elevator, Rudder and Throttle

(b) No coupling or mixing of the flight controls. Using the transmitter to replicate a mechanical mix (i.e. shortening the clevis on a control arm to droop the ailerons) is permitted. The CD will have the final decision on whether the mix would be achievable through a mechanical means and is within the spirit of Class 2. If a mechanical mix is used it may not be switched in or out during the flight, must remain in operation from take-off to landing and may not be altered (increased or decreased) in any way.

(c) No changing of wings or any other flying surfaces

(d) No changes in control surface area

(e) If a model is 'written off' during the competition, any substitute model must be of fundamentally the same configuration. The substitute model will only be allowed to be used at the CD's discretion.

(f) All IC engines should be fitted with an effective silencer.

(g) Stability systems (gyros) are <u>not</u> allowed

5.7.2.3 Motive Power Limitations

IC Engine: Two Stroke: ..... Up to a maximum of 0.42 cu.ins

Four Stroke: ..... Up to a maximum of 0.52 cu.ins

Electric Power: ..... Up to a maximum of 3 cell Li-Po batteries

Standard silencers only may be used, i.e. no tuned pipes. IC engines will be inspected and battery packs inspected at the CD's discretion. Fuel feed is to be by suction or exhaust pressure only.

5.7.2.4 Event Details

The competition will involve five events, as detailed below:

1 Longest Glide

2 Spins & Spot

3 Limbo

4 Touch & Go's

5 Mystery Round (Event randomly selected from the following: Deadstick Aerobatics, Water Carrying, Touch & Go Bang and Doughnut Drop). The mystery event will be decided on day 1 of the competition by a random draw, but if either Deadstick Aerobatics or Touch and Go Bang are selected by class 1, then that selected event will be withdrawn from class 2's selection.

5.7.3 Individual Event Rules

5.7.3.1 Longest Glide Rules

The aim of this event is to climb under power for a set time period before cutting the engine and gliding for as long as possible. A time bonus of 10% is available for landing in the marked square. The dimensions for the marked square are shown in Figure 1.

(a) The throttle on the engine must be set so that the engine can be stopped on command from the marshal. Where electric power is used, demonstration that the motor stops when the transmitter stick is fully back must be shown. Also for electric motors, the motor 'brake' must be turned on, so the propeller cannot free wheel when the power is off. Observers will then be watching throughout the flight for the propeller turning to ensure no power is being applied.

(b) Pilots will take off from inside the square and climb for 20 seconds from wheels off. Climb time may be reduced subject to weather conditions.

(c) After 20 seconds has elapsed pilots will be instructed by the marshal to stop the engine. The throttle should then be opened fully and left open for 5 seconds to ensure that the engine has stopped (This does not apply to electric models).

(d) If one main wheel first touches within the marked square, a bonus of 10% will be added to the time for that round. Touches on the line will be counted, but at the marshal's and CD's discretion.

(e) The pilot with the longest total time will be the winner.

(f) In the event of a tie, there will be a fly-off with a reduced engine run time of 10 seconds.

5.7.3.2 Triple Thrash Rules

The aim of this event is to take-off, perform 3 touch & gos, 3 rolls, 3 loops and another touch and go as fast as possible, in that order.

(a) All touch & gos must be within the marked square (Ref Figure 1). Touches on the line will be counted, but at the marshal's and CD's discretion. All touch and gos must be flown in the same direction

(b) All loops and rolls will be judged by the CD and marshals as compliant with the rules. Pilots must complete vertical inside loops and complete horizontal rolls.

(c) A circuit and landing must be performed after the last touch & go. Timing will not stop if the model does not leave the ground and complete a circuit following the final touch.

(d) Timing will start from wheels off and finish when at least one of the main wheels touches the ground on the last touch & go.

5.7.3.3 Spins & Spot Rules

The aim of this event is to perform as many spins as possible after using a total 'power on' time of 30 seconds, to climb. A spot landing bonus is also available on landing.

(a) The pilot will take-off from inside the marked square. The 'power on' time of 30 seconds will then start from wheels off.

(b) The 'power on' time of 30 seconds does not have to be used in one go. The pilot may use it in parts to his or her choosing, i.e. the pilot may climb for 15 seconds, spin the model, climb for a further 10 seconds before spinning the model again. The remaining 5 seconds may then be used to help return to the square

(c) 'Power on' time is used whenever the throttle stick is moved from its' bottom stop. (Idle). A slow idle should be demonstrated before take off. Slow idle will be deemed as a setting that will not provide an advantage to the pilot when returning to the square. This will be at the CD's discretion.

(d) After the 30 seconds 'power on' time is used up, the pilot may not open the throttle from its' bottom stop again. Using more than 30 seconds to climb will result in disqualification from the event, but on landing, following the final spin and once all the power on time has been used up, should the pilot open the throttle from its'

bottom stop again, the landing bonus will not be counted, but the spins will still be allowed.

(e) The 30 seconds will be counted down every 5 seconds, then every second for the last 5 seconds.

(f) Should the engine stop before all 30 seconds 'power on' time have been used, no engine re-start will be allowed.

(g) 5 points will be awarded for every complete spin. A spin is defined as the model descending in a stall and rotating using input from rudder, elevator and aileron. Spiral dives are not allowed.

(h) The landing score will be wherever a main wheel first touches in the marked square, as shown in figure 2. The maximum score being 100 points for the centre square, 80 points for the second square then 60 and finally 40 for the outer square. Whichever wheel touches first will be taken as the score and if that wheel lands on the line between two scoring zones, the higher of the two scores will be taken.

(i) The overall score will be the points awarded for the spins added to the landing score. In the event of a tie, there will be a fly-off with a reduced 'power on' time of 15 seconds.

5.7.3.4 Limbo Rules

The aim of this event is to complete the highest number of clean passes through the limbo gate within 2 minutes. A clean pass will be scored if the model passes under and in between the tapes that form the limbo gate without touching the ground or cutting the tapes. The gate dimensions are shown in Figure 3.

(a) The pilot must take-off safely away from the gate into wind. The helper must retire immediately from the gate, but be ready to retrieve the model if the engine cuts.

(b) Timing will commence when the pilot performs a nominated starting pass over the limbo gate. The amount of practice passes over the top of the gate will be down to the CD's discretion on the day.

(c) All passes must be in the same direction. Touching the ground before, under or after the tape will not count as a limbo

(d) If the engine cuts during the flight, it may be re-started and the event continued but the clock will not be stopped.

(e) If the tapes that form the limbo gate are cut, only the clean passes up to that point will count. The pass cutting the tape does not count.

(f) In the event of a tie, a fly-off will take place, but only over 1 minute.

5.7.3.5 Touch & Go Rules

The aim of this event is to complete the highest number of touch & gos in the marked square as possible within 2 minutes (Ref Figure 1).

(a) Pilots must take-off into wind from inside the marked square.

(b) Timing will start from wheels off.

(c) All touch & gos must be flown in the same direction. To qualify as a touch & go, at least one main wheel must first touch within the square, (they may roll across the line after touching within the square), and then lift off. Touches on the line will be counted, but at the marshal's and CD's discretion.

(d) If the engine cuts during the flight, it may be re-started and the event continued but the clock will not be stopped.

(e) In the event of a tie, a fly-off will take place, but only over 1 minute.

5.7.3.6 Deadstick Aerobatics Rules

The aim of this event is to climb under power for a set time period before cutting the engine and performing as many loops or rolls as possible. A bonus of 10% is available for landing in the marked square. The dimensions for the marked square are shown in Figure 1.

(a) The throttle on the engine must be set so that the engine can be stopped on command from the marshal. Where electric power is used, demonstration that the motor stops when the transmitter stick is fully back must be shown. Also for electric motors, the motor 'brake' must be turned on, so the propeller cannot free wheel when the power is off. Observers will then be watching throughout the flight for the propeller turning to ensure no power is being applied after the climb. We understand that in a dive the propeller might turn slightly, so common sense will be used when observing.

(b) Pilots will take off from inside the square and climb for 20 seconds from wheels off. Climb time may be reduced subject to weather conditions.

(c) After 20 seconds has elapsed pilots will be instructed by the marshal to stop the engine. The throttle should then be opened fully and left open for 5 seconds to ensure that the engine has stopped (This does not apply to electric models).

(d) Pilots will be awarded 10 points for every complete vertical inside loop and 3 points for every complete horizontal roll. The loops and rolls will be judged by the marshals and CD as being compliant with the rules

(e) If one of the main wheels first touches within the marked square, a bonus of 10% will be added to the score for that round Touches on the line will be counted, but only at the marshals' and CD's discretion.

(f) In the event of a tie, there will be a fly-off with a reduced engine run time of 10 seconds.

5.7.3.7 Touch & Go Bang Rules

The aim of this event is to burst as many of the balloons and complete the highest number of touch & gos in the marked square as possible within 2 minutes (Ref Figure 4). This can be done in any combination the pilot wishes

(a) Pilots must take-off into wind from inside the marked square.

(b) Timing will start from wheels off.

(c) All passes must be flown in the same direction.

(d) Pilots will be awarded 10 points for every balloon burst and 1 point for every touch & go. Balloons will only count if the model's wheels are off the ground. Taxiing into balloons or sticks will not count. The balloon must be burst by the model, so breaking the stick or knocking the balloon off and it then bursting on the ground will not count either. To qualify as a touch & go, at least one main wheel must first touch within the square, (they may roll across the line after touching within the square), and then lift off. Touches on the line will count, but at the marshal's and CD's discretion.

(e) If the engine cuts during the flight, it may be re-started and the event continued but the clock will not be stopped.

(f) In the event of a tie, a fly-off will take place, but only over 1 minute.

5.7.3.8 Water Carrying Rules

The aim of this event is to have a small cup of water attached to your model, then take off, fly a normal circuit and land while trying to keep as much of the water in the cup as possible.

(a) Pilots must take off safely into wind, once the cup has been filled with water.

(b) A big circuit (to be advised by the CD at the event) must then be flown and then the model landed in front of the pilot.

(c) The amount of water will then be measured. The pilot with the most water left in the cup will be the winner.

(d) The score will be doubled if a loop is completed at any time during the circuit.

5.7.3.9 Doughnut Drop Rules

The aim of this event is to fly over the marked square as described in figure 2 carrying a rubber ring slid over an attached pole (supplied by the CD), which is attached to your model, then drop the ring (doughnut) on the square. Points are awarded for getting the rubber ring as close to the centre of the square as possible.

(a) The supplied pole is 10cm in length and can easily be attached to the top of the model before the start of the event. The doughnut (rubber ring) is about 7cm in diameter and has a streamer attached. It is slid onto the vertical pole before takeoff.

(b) Pilots must take off into wind and then, when told it is safe to do so by a marshal, may drop the doughnut onto the target. The doughnut can be dropped in any way, for example by rolling, looping, pushing forward, etc.

(c) Points are awarded where the doughnut stops and not where it first touches. Maximum points are 100 for the centre square, then 80, 60 and 40 for the outer square. Missing the square entirely is zero points. If the doughnut lands on the line between two scoring zones, the higher score will be taken.

(d) Each pilot has three drops, landing to get another doughnut after every drop, i.e. only dropping one at a time. The total score will be the three drops added together.

5.7.3.10 Roop Rules

The aim of this event is to complete as many pairs of a roll and a loop as possible within 1 minute.

(a) Pilots must take off from the marked square in figure 1, into wind. Time will start from wheels off and will be counted down every 10 seconds and then every second for the last 10 seconds.

(b) Once in the air, the pilot should complete as many pairs of a roll followed by a loop as possible in the minute allowed. A roll must be horizontal and a loop must be a normal vertical inside loop. All loops and rolls will be judged by the marshals and CD as being compliant with the rules.

(c) Each completed pair is worth 1 point, the winner being the pilot with the most points.

(d) The pilot must land, touching a main wheel first back in the marked square before the minute is up. If the pilot is still flying and has not touched in the square when the minute is up, a penalty of 2 points per second over time will be deducted from the score.

(e) In the event of a tie, there will be a fly off with a reduced time of 30 seconds.

5.7.3.11 Blackjack Rules

The aim of this event is to Score 21 by performing touch and gos on a numbered marked square in the shortest time possible, without going over 21.

(a) The square as described in figure 2 will be marked as follows : 10 points for the centre square, then 5, 2 and 1 point for the outer square.

(b) Pilots must take off into wind from the square and time will start from wheels off.

(c) All touch and gos must be flown in the same direction and only one touch per pass is allowed.

(d) If the engine cuts during the flight, it may be re-started and the event continued, but the clock will not be stopped.

(e) Points are awarded by touching the wheels in the sections of the square corresponding to either 10, 5, 2 or 1 points. Whichever main wheel touches first will be taken as the score and if that wheel lands on the line between two scoring zones, the higher of the two scores will be taken. The pilot will be told the score after every touch.

(f) The aim is to get a score of 21. The time will stop on the final touch that gets the pilot up to a score of 21. The winner will be the pilot that completes the task in the shortest time.

(g) If, however, the pilot goes over 21 (bust) then the score will revert back to the previous total before that touch and the pilot will keep performing touches until a score of 21 is achieved.

5.7.3.12 Wild Card Rule

Each entrant in either Class 1 or 2 will be allowed 1 ‘wild card’ flight during the competition. The ‘wild card’ enables the pilot to re-fly any 1 event during the time allocated to that particular event. The pilot must inform the CD of their intention to use the ‘wild card’ at which point the pilots’ original score for that event will be scrubbed. In the event of a high number of entrants or bad weather, the wild card rule might be abolished for the duration of the competition.

5.7.4 Event Scoring

The winner of each event will be given 100 points. The other pilots will score on a percentage basis according to their performance

i.e.:	Winner of Longest Glide	10 mins	=	100 points
	Second place	8 mins	=	80 points

The following formula is used:

$$\text{Points}_X = \frac{S_X}{S_W} \times 100$$

Where	PointsX	=	points awarded to competitor X.
	SX	=	score of competitor X.
	SW	=	score of winner of round.

For instance, the winner of longest glide scores 10 minutes (600 seconds) and a runner-up scores 8 minutes 25 seconds (505 seconds)

The winners score will be 100 points while the runner up's will be ;

$$\frac{505}{600} \times 100 = 84 \text{ points}$$

As another example, in the Touch and Go task, if the winner does 16 touch and goes and a runner up does 11.

The winners score would be 100 points and the runner up's would be;

$$\frac{11}{16} \times 100 = 69 \text{ points}$$

The individual event scores will be added together to get the overall total. The pilot with the most overall points in each class will be the winner

5.7.5 Pilot's Rules for All Events

(a) Every pilot must have a helper for all flights. No helper = no flight.

(b) The model must be returned to the pits area immediately on completion of the flight and for 35Mhz transmitters, the frequency peg and transmitter returned to the official compound.

(c) Hard Hats must be worn by pilots, helpers and marshals when they are out on the flightline. Individuals should supply their own hard hats (PPE) and satisfy themselves that they meet any such standards to provide adequate protection during the event..

(d) The CD, in consultation with a minimum of 2 marshals will judge all events. The CDs' decision is final!

(e) A 30 minute trimming session will be made available to test and trim models at the start of each day. This should be completed as quickly as possible to allow enough time for everyone to fly and is not to be treated as a practice session. A helper must accompany the pilot during the flight.

(f) Pilots must attend pilots briefing at the beginning of each day.

(g) If any model is considered by the CD to be unsafe to fly, it will be grounded. Dangerous flying will result in immediate disqualification.

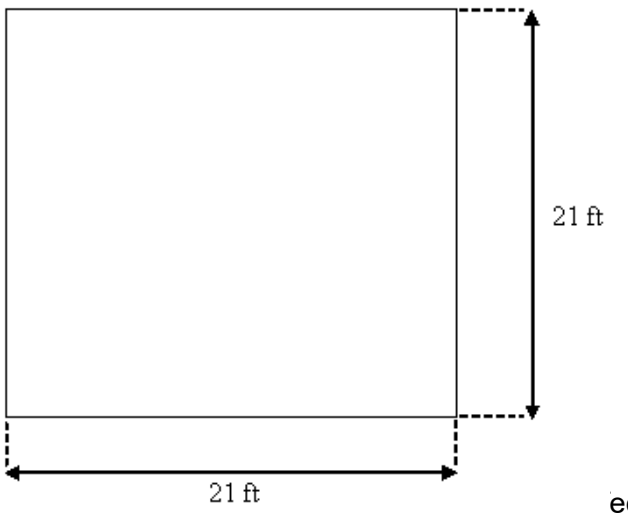
(h) Each pilot must use the same model for each event.

(i) All pilots must take-off in a safe manner into wind. Whilst airborne, the pilot must be between the model and the spectators/other pilots.

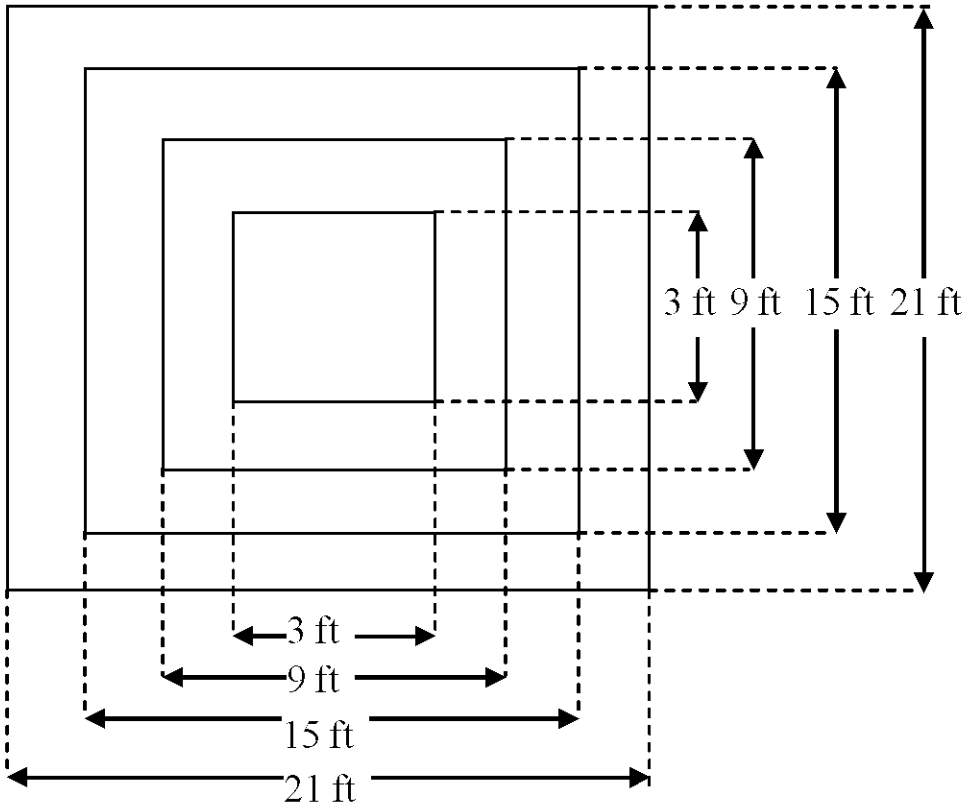
(j) Every model must have coloured tape applied to each wheel to help with the judging of some events. This tape will be available from the CD at the beginning of the competition.

(k) Failsafes will be checked at the beginning of the competition. Model eligibility may also be checked at this time or at any time over the duration of the competition.

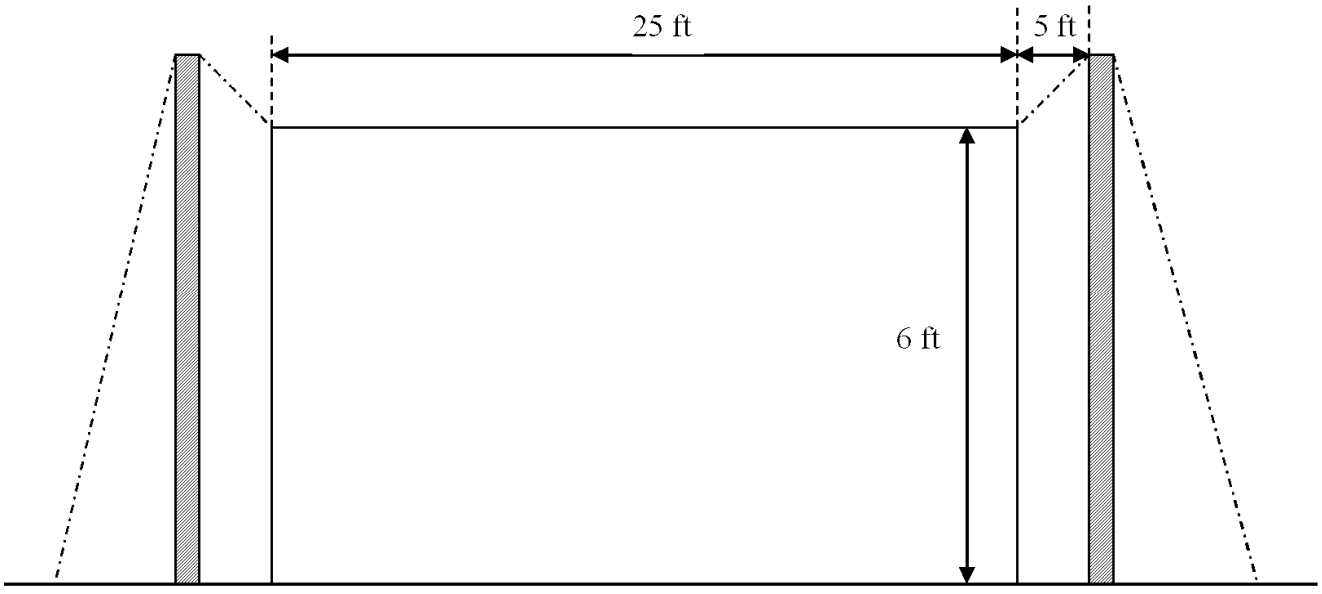
Dimensions of Marked Square



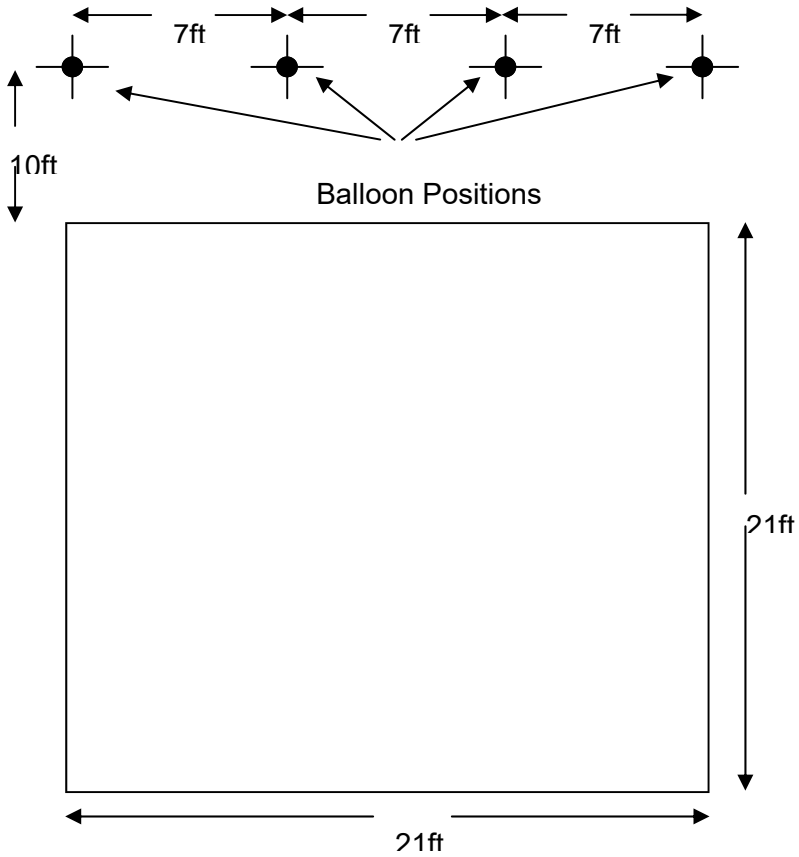
Dimensions of marked square for Spins & Spot, Doughnut Drop & Blackjack



Dimensions of limbo gate



Touch and go bang layout



5.8 F9U R/C Drone Racing

with thanks to the British Drone Racing Association

5.8.1 General

5.8.1.1 Objective

To provide a consistent set of rules for BMFA-sanctioned drone racing competitions.

5.8.1.2 BMFA Competitions

BMFA F9U Team Selection competitions
BMFA National Championship

5.8.1.3 Conduct & Disqualification

All BMFA and CAA regulations covering the competitor, drone and equipment shall be applicable to any competition run in accordance with these rules. Consideration of the safety of spectators, contest personnel, and other contestants is of the utmost importance. Flying over a controlled spectator area will result in immediate disqualification of the flight. Further infractions in the competition by that pilot will result in ~~the~~ disqualification from the contest. Unsportsmanlike conduct will not be tolerated and if reports of such behaviour are upheld then the competitor will be disqualified from the contest.

5.8.1.4 Protests and Appeals

At UK competitions protests and appeals shall be dealt with as per rule 5.0.6 of these rules.

5.8.2 BMFA Variations on F9U Radio Controlled Drone Racing

Note: The F9U class rules can be downloaded at https://www.fai.org/ciam-documents or obtained directly from BMFA Head Office.

5.8.2.1 (B.1) General Specifications for Models

5.8.2.1.1 (B.1.7) Identification mark

At UK domestic competitions, the national identification mark and FAI Sporting Licence ID are not required to be carried on each model.

5.8.2.1.2 (B.4) Model Registration and Processing

The model specification may be changed according to site requirements. If this is the case then the information must be made available at least one calendar month before the competition.

5.8.2.2 Optional and Local Rules

(a) Local rules, in accordance with General Rule 2.5.4, may apply to any BMFA competition and will be notified to the competitors by the organiser together with announcement of the competition on the *BMFA Contests and Events Calendar* on the BMFA website at least one month in advance of the competition.

(b) Where the FAI rules provide more than one option for running the contest, the options selected by the contest organiser will be notified no later than the date

on which the competition is published on the *BMFA Contests and Events Calendar* on the BMFA website.

5.8.3 F9U Team Selection

5.8.3.1 Competitions

(a) Team Selection competitions for F9U shall be run in accordance with the current FAI Sporting Code and relevant BMFA variations. A minimum of one BMFA Team Selection competition per year will be organised.

(b) If more than one competition is held then the Team Selection ranking will be calculated from the sum of each competitor's scores from each competition entered, up to a maximum of three. If more than three competitions are held then the three best scores for each competitor will be counted towards the Team Selection ranking.

(c) If two or more competitors are tied on points then the competitor with the greater number of final-round wins will be awarded the position. If a tie still occurs then the competitor with the greater number of final-round second-places will be awarded the position, and so on until a tie no longer exists. If the tie cannot be broken by considering final-round places alone then the qualifying positions will be considered.

(d) Team Selection competitions shall be notified and submitted to the *BMFA Contests and Events Calendar* on the BMFA website at least one month prior to the competition.

5.8.3.2 Entry

(a) Pre-entry is essential and details of how to enter will be provided at the same time as the competition is published in the *BMFA Contests and Events Calendar*.

(b) Entries cannot be accepted until the competition is published on the *BMFA Contests and Events Calendar* and entry cannot be confirmed until payment is received.

(c) On the day entries may be permitted but only if there are vacancies.

5.8.3.3 Eligibility

(a) Eligibility to represent the United Kingdom (Team GBR) at European and World Championships will be determined by the Team Selection ranking table.

(b) Competitors must be members of the BMFA in order to be eligible for inclusion in the Team Selection ranking table.

(c) The ranking table will be calculated from each eligible individual's scores as per 5.8.3.1 from all Team Selection competitions that have been run between 1st December, the previous year, and 31st November of the current year. The ranking table will remain valid for Team Selection purposes until the creation of a fresh table is triggered by the first competition after the 31st November.

(d) Qualification for the team will be the top 1-2-3 competitors with the 4th placed competitor being allocated the Reserve team place. Provision may be made for a Junior team member in addition.

If one or more of the top pilots declines their place, then the next highest pilot in the rankings will be offered a place, until all the positions have been filled.

5.8.3.4 Scoring System

Competitors will be allocated points after each Team Selection competition according to the following formula:

$$\frac{(b+1-a)}{b} \times 100$$ rounded up to the nearest 0.5.

where:

a = competitor's position
b = the number of competitors

eg: the competitor who comes 10th in a field of 36 would receive:

$$\frac{(36+1-10)}{36} \times 100 = 75\,points$$

First place is awarded the maximum 100 points.

Last place is awarded the minimum (non-zero) points as determined by the number of competitors. In this example that would be 3 points.

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