



**BRITISH MODEL FLYING ASSOCIATION
CONTEST RULES - SECTION 5**

R/C POWER

**AEROBATICS PYLON RACING
HELICOPTERS WATERPLANES
SAM 35 VINTAGE FUN-FLY**

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

Effective March 2015

Supersedes January 2014 Issue

Price £3.00

SECTION 5 - R/C POWER RULES 2015

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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. However IMAC UK Scale Aerobatics, Pylon Racing and Helicopters have been renumbered to a more logical system and these changes have NOT been side barred to avoid confusion.

FAI class rules for, F3A, F3P, F3M, F3S, F3C, F3N, F3D, F3R, and F3X/Q40, are not included in this book. They are available for download at www.fai.org/fai-documents# or www.fai.org/ciam-documents or can be obtained from BMFA Head Office.

Gender

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

Synopsis of Changes

- 5.0 Completely rewritten
- 5.1 Completely rewritten.
- 5.2 All the manoeuvre diagrams have been deleted but are available from the IMAC website at www.imacuk.org
- 5.3.1 As this para. is Pylon specific moved here from the old 5.0 General section
- 5.4.1 as this para. is Helicopter specific moved here from the old 5.0 General section

5.0 GENERAL RULES

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

The frequencies used in any competition are the responsibility of the Contest Director (CD). Unless using 2.4GHz frequency the following rules shall apply:

- (a) Only odd channel numbers will be allowed for R/C power competitions unless otherwise specifically allowed.
- (b) Where an entrant is required to specify his frequency, either on the field or on pre-entry, this may not be changed without the consent of the CD.
- (c) Transmitters must display a frequency identification pennant and the name and address of the competitor plus their BMFA number must be displayed on the outside of the transmitter case in such a fashion as to be easily readable.
- (d) CD's must ensure that an adequate transmitter impound system is in operation at all competitions.
- (e) Entrants to competitions are responsible for ensuring that their transmitters remain in the transmitter impound area for the duration of the contest except when actually in use.

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 F3A competitions and 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 events, CD's are strongly recommended to insist that the 'B' Certificate is the required standard of pilot competence.

5.1 AEROBATICS

5.1.1 GENERAL

5.1.1.1 All BMFA Fixed Wing Aerobatics competitions, except Scale 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 Model Weights

F3P models shall have a maximum weight of 300g.

5.1.1.3 BMFA Competitions

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

5.1.2 BMFA TEAM SELECTION COMPETITIONS FOR F3A & F3P

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

(b) F3A Team Selection competitions will use the current FAI schedules 'P' & 'F'.

(c) 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 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 events per year in the appropriate classes.

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 Full processing of models, sound checks (F3A) and flight timing will be carried out according to the current FAI Sporting Code.

5.1.2.8 (a) A league table will be compiled for each class based on all the qualifying Team Selection competitions which provide a result in the relevant qualifying period as stated in 5.1.2.5 above.

- (b) The results from each event will be normalised to 1000 and used to form the table. In the event of a tie where only two flights are flown then each competitor carries forward 1000 normalised points to the league.

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

5.1.2.10 The F3A & F3P Team Selection League positions will count towards the places in the British Team to represent the United Kingdom (GBR) at European and World Championships. At the end of the season the top three pilots, who wish to take up their place as a team member in each Team Selection league, will normally be recommended to the BMFA as the GBR Team. The 4th placed competitor who is willing to take his place on the Team will be recommended as the Reserve Team Member.

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 85% of the appropriate Team Selection League winner's total counting normalised scores.

5.1.2.13 Pilots Briefing

The CD should outline the rules applicable to the Team Selection and Domestic Open competitions, flight order, start time, positioning of box markers, any local restrictions or special requirements of the site. Announce arrangements for processing of models in the Team Selection competition; introduce judges & time keepers, scorers & other officials. Liaise with the Senior Judge to determine judging breaks & the lunch break.

5.1.2.14 Mobile Telephones

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

5.1.2.15 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.

5.1.3 BMFA Variations on F3A and F3P

5.1.3.1 Number of Rounds

- (a) F3A Unless adverse weather conditions dictate otherwise competitions will comprise two rounds of the FAI Preliminary (P) schedule followed by one round of the FAI Finals (F) schedule.
- (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

5.1.3.2 Scoring

- (a) F3A 3 rounds - best 2 to count
2 rounds - best 1 to count
1 round to count
- (b) 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.

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

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

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

5.1.3.6 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.

5.1.4 Indoor Aerobatics Schedules (with acknowledgements to GBR/CAA)

- 5.1.4.1 (a) The following Indoor Schedules are for the FAI F3P class of models
(b) BMFA and F3P Team Selection Competitions may include either or both of the following schedules B and C as additional events.

5.1.4.2 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 $\frac{1}{4}$ roll (either direction) to knife edge flight. After a short pause push or pull through a $\frac{1}{4}$ horizontal circle into cross box knife edge flight. Push or pull through a $\frac{1}{4}$ horizontal circle into a parallel knife edge flight. After a short pause perform a $\frac{1}{4}$ 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 $\frac{1}{4}$ loop into a vertical up line. Push through a $\frac{1}{4}$ loop into horizontal upright flight. Push through a $\frac{1}{4}$ loop into a vertical down line. Push through a $\frac{1}{4}$ 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 $\frac{1}{4}$ loop into a vertical up line, perform a full roll, followed by a stall turn into a vertical down line. Pull through a $\frac{1}{4}$ 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 $\frac{2}{3}$ points.
- If the stall turn is between 1.5 wing spans and a 2 wing spans then minus $\frac{4}{5}$ 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%)

5.1.4.3 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%)

5.1.5 Other Aerobatics (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 5.1.5.4 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 1/4 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 1/4 loop into a vertical up line, perform a full roll, followed by a stall turn into a vertical down line. Pull through a 1/4 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 1/4 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 1/2 Rolls in legs 1 and 3:

From upright on the top line pass centre and push through a 1/4 loop into a vertical down line. Perform a half roll centred on the vertical down line. Pull through a 1/4 loop to upright on the baseline and fly past centre and pull through a 1/4 loop to a vertical up line. Perform a half roll centred on the vertical up line. Push through a 1/4 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 $\frac{5}{8}$ of an outside loop into a 45° down line. Perform a half roll in the centre of the 45° down line. Push through $\frac{3}{4}$ of an outside loop into a 45° down line. Perform a half roll in the centre of the 45° down line. Push through a $\frac{1}{8}$ 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 $\frac{1}{4}$ 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 $\frac{1}{4}$ 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 $\frac{3}{4}$ 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 $\frac{1}{4}$ roll (either direction) into knife edge. Past centre perform a $\frac{1}{4}$ 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 $\frac{1}{4}$ 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 5.1.5.4 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 $\frac{5}{8}$ of an inside loop into a 45° down line. Push through $\frac{3}{4}$ of an outside loop into a 45° down line. Pull through a $\frac{1}{8}$ 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 VINTAGE AEROBATICS

5.1.6.1 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.

5.1.6.2 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.

5.1.6.3 Eligible Engines

- (a) Any two-stroke cross flow engine up to 0.61 in³ capacity (i.e. no schnuerle ported engines)
- (b) Any four-stroke engine up to 0.80 in³ capacity.

5.1.6.4 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 in³ engines and above, the minimum propeller diameter is to be 12 inches and the minimum pitch is to be 6 inches.

5.1.6.5 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.

5.1.6.6 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). ($\frac{1}{2}$ roll followed by $\frac{1}{2}$ 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 Open Events:

5.2.3.1 The events accommodate aerobatic monoplanes and biplanes which are replicas of types known to have competed in International Aerobatic Club (IAC) competition, or replicas of types known to be capable of aerobatic competition within the airspace known as the 'Box'.

5.2.3.2 All classes except Basic require that the pilot must meet the requirements defined in Rule 3.1. There is no minimum size requirement for any class. Contest Directors may make an exception for a model of a full scale aircraft that was built for IAC competition, but has not yet competed. Proof of the latter is the responsibility of the contestant.

5.2.3.3 The known sequences will be developed, annually, by the IMAC Sequence Committee, in accordance with the current FAI 'Aresti System (Condensed)'. The IMAC Board of Directors must approve all known sequences for use in IMAC competition.

5.2.3.4 The unknown sequences will be drawn from the Catalogue of Legal Unknown Figures for each class. The Catalogue of legal Unknown Figures is located in the Rules Section of the IMAC Website.

5.2.3.5 Difficulty of 'K' factors for known and unknown sequences will be derived from the current FAI 'Aresti System (Condensed)'.

5.2.4 Model Aircraft Specifications:

5.2.4.1 Only one (1) propeller per aircraft shall be allowed. Internal combustion reciprocating engines and electric motors shall be allowed. If the aircraft is utilizing an internal combustion engine, only one (1) engine shall be allowed. If the aircraft is utilizing electric motors, more than one (1) electric motor may be used.

5.2.4.2 The model shall comply with all BMFA Safety Codes.

5.2.4.3 There shall be no airborne devices fitted to the aircraft which place the aircraft under less than total control by the pilot. These devices will include, but are not limited to, gyros, automatic pilots and timing devices. Non-airborne aids such as transmitter based functions are permissible.

5.2.4.4 The Builder-of-the-Model (BOM) rule shall not apply.

5.2.5 Scale Aerobatic Sound Limits

(Figure 1 Intentionally Removed From the F&JG)

5.2.5.1 In-Flight Judging Criteria, Known and Unknown Sequences.

Local noise level rules will apply.

Judges will evaluate each individual sequence flown in its entirety for overall sound presentation. Each judged Known and Unknown sequence, shall have one figure added to the end of the score sheet after individually judged manoeuvres. This figure shall be known as the Sound Score. The Sound Score will have a K value dependent on the class flown. Individual class K values are:

- Unlimited 15 K
- Advanced 12K
- Intermediate 9K
- Sportsman 6K
- Basic 3K.

The sound presentation will be scored on a scale of 10 to 0 with 10 denoting Very Quiet, and 0 denoting Very noisy. Whole points will be used for scoring. This sound score will then be multiplied by the K value for the individual class and included in the total flight score for the sequence. Note that each judge's score is independent of the other(s) and no conferencing on the sound score is required.

If a pilot receives a sound score of three (3) or less for the same sequence from two or more judges, the pilot will be notified of the problem and will be requested by the Contest Director to adjust or modify the aircraft in order to reduce the sound level prior to the next round. If that pilot, after notification, again receives a sound score of three (3) or less for the same sequence from two or more judges, that pilot will be disqualified from further competition at that contest.

5.2.6 Proof of Scale:

5.2.6.1 To prove that the model resembles a particular aircraft some proof of scale is required.

5.2.6.2 Proof of scale is the responsibility of the contestant.

5.2.6.3 The general outlines of the model shall approximate the full size outlines of the subject aircraft. Exact scale is not required. The model shall be judged for likeness at a distance of approximately 10 feet.

5.2.6.4 If the contestant presents no proof of scale material with the model, and the CD can determine that the aircraft is a replica of a full-size aircraft, then the contestant will be allowed to have his/her entry considered.

5.2.6.5 Scale shall be determined by the wingspan. A change in wingspan will become a change in overall Scale. Fuselage width, height and aircraft planform or any other variations shall not exceed 10% of scale, with the exception of airfoils and size/shape of control surface within the scale outline rule.

5.2.6.6 A realistic three-dimensional human pilot and viewable instrument panel shall be appropriately installed in all Scale Aerobatic aircraft. (A one [1] percent flight score penalty will be assessed for noncompliance.)

5.2.7 Material and Workmanship:

Workmanship must be of satisfactory standards. The Contest Directors are empowered to refuse permission to fly, or to disqualify any aircraft which, in their opinion, is not up to reasonably safe standards in materials, workmanship, or radio installation.

5.2.8 Competition Classes:

- 5.2.8.1** The event shall be divided into five (5) classes, in order of increasing difficulty. The classes are Basic (411), Sportsman (412), Intermediate (415), Advanced (413), and Unlimited (414).
- 5.2.8.2** An Optional Four (4) Minute Freestyle may also be offered. A pilot must compete in one of the above classes to be eligible for the freestyle event.
- 5.2.8.3** Contest Directors and/or the sponsors of a sanctioned meet shall determine which of the classes and events will be flown. Such information must accompany all advance notices pertaining to the contest, including any planned deviation from standard rules, at least 30 days prior to the date of the contest.

5.2.9 Classification - Contestant, Season, Advancement:

- 5.2.9.1** A contestant may enter any one competition class at their own option. Once having flown a contest in a class, a contestant may not compete in a lower class without written permission from their regional director.
- 5.2.9.2** In the USA the new contest season begins on January 1 of each year. On or before that time, the new Known sequences for all classes will be approved by the IMAC Board of Directors and made available to the IMAC membership on the IMAC website.
- 5.2.9.3** A contestant in Basic through Advanced classes will be required to move to the next higher class at the beginning of the next calendar year if the contestant wins five (5) or more contests in the current year provided that in each winning contest the contestant flew against at least four (4) other competitors who made official flights. If any of the contestant's winning contests had fewer than four (4) other competitors that made official flights, that contest will not be counted in the total of winning contests used to force advancement in class.

5.2.10 Official Flights:

5.2.10.1 Official flight for known program.

- 5.2.10.1.1** An official flight (round) for the known program is defined as two (2) sequences. When time constraints prevent two (2) sequences from being flown, a round may consist of one (1) sequence. Contestants shall have one attempt per sequence to complete the sequence. An attempt begins when the pilot or caller calls "In the box" or "Entering". This specific vocal signal is mandatory to initiate the attempt. If this vocal declaration is not made the pilot becomes subject to the other standard constraints stipulated in these rules, e.g., time limit for entering, no aerobatics before entering, etc.

Once the attempt is made by means of the vocal declaration, judging will begin as soon as the aircraft departs from the wings-level horizontal entry line and enters the first manoeuvre of the sequence. The horizontal entry line to the first manoeuvre of a sequence is not judged.

- 5.2.10.1.2** If a Known sequence in progress is determined by the judges to have been interrupted by a circumstance beyond the control of the contestant, the contestant may resume the sequence with the manoeuvre in progress at the time of the interruption. This manoeuvre will be scored. Note that a mid-air collision is considered to be beyond the control of the contestant. If a mid-air occurs, each pilot, if still flying, must land and pass a safety inspection by the CD before continuing with that aircraft. The pilot also has the option of continuing with a different plane. After the mid-air, each pilot involved will declare his/her intention to complete the round or not. If the contestant chooses to continue, they will be positioned last in the round and be subject to whatever time

constraints may be in force at the contest. In this case, no penalty will be imposed for repositioning to the end of the round rotation. When the contestant is again airborne they will resume the round with the figure prior to that in which the interruption occurred. This figure will not be judged. Judging will resume after the completion of said prior figure. If the contestant chooses not to continue the round, they will receive zeros for all manoeuvres not yet scored at the time of the mid-air.

5.2.10.1.3 If a Known sequence in progress cannot be completed due to mechanical problems with the aircraft (including but not limited to engine failure, radio malfunction, etc...) the contestant will receive zeros for each un-scored manoeuvre in that sequence. If the second sequence is yet to be flown and the aircraft can be made ready to fly the contestant may attempt the second sequence. In such cases, the contestant will be positioned last in the round and be subject to whatever time constraints may be in force at the contest. When the contestant is again airborne they will fly the second sequence. In this case, no penalty will be imposed for repositioning to the end of the round rotation.

5.2.10.1.4 An official flight (round) is two (2) sequences and the contestant is expected to be able to fly both sequences without re-fuelling between sequences. If the second sequence cannot be completed the contestants will receive zero (0) for each un-scored manoeuvre in that sequence. The only exception is if Rule 10.1.2 is in effect.

5.2.10.2 Official flight for unknown program.

5.2.10.2.1 An official flight (round) for the unknown program is defined as one (1) sequence. Contestants shall have one attempt to complete the sequence. An attempt begins when the pilot or caller calls "In the box" or "Entering". This specific vocal signal is mandatory to initiate the attempt. If this vocal declaration is not made the pilot becomes subject to the other standard constraints stipulated in these rules, e.g., time limit for entering, no aerobatics before entering, etc.

Once the attempt is made by means of the vocal declaration, judging will begin as soon as the aircraft departs from the wings-level horizontal entry line and enters the first manoeuvre of the sequence. The horizontal entry line to the first manoeuvre of a sequence is not judged.

5.2.10.2.2 If an Unknown sequence in progress is determined by the judges to have been interrupted by a circumstance beyond the control of the contestant, the contestant may resume the sequence with the figure prior to the interruption. This figure will not be judged. Judging will resume after completion of said prior figure. Note that a mid-air collision is considered to be beyond the control of the contestant. If a mid-air occurs, each pilot, if still flying, must land and pass a safety inspection by the CD before continuing. The pilot has the option of continuing with a different plane.

After the mid-air, each pilot involved will declare his/her intention to complete the round or not. If the contestant chooses to continue, they will be positioned last in the round and be subject to whatever time constraints may be in force at the contest. In this case, no penalty will be imposed for repositioning to the end of the round rotation. When the contestant is again airborne they will resume the round with the figure prior to that in which the interruption occurred. This figure will not be judged. Judging will resume after the completion of said prior figure. If the contestant chooses not to continue the round, they will receive zeros for all manoeuvres not yet scored at the time of the mid-air.

5.2.10.2.3 If an unknown sequence in progress cannot be completed due to mechanical problems with the aircraft (including but not limited to, engine failure, low fuel, radio malfunctions, etc.), the contestant will receive zeros (0) for each un-scored manoeuvre in that sequence.

5.2.11 Number of Flights:

There shall be no limit on the number of flights (other than that imposed by time available).

5.2.12 Aerobatic Airspace:

Refer to Flying and Judging Guide, Rule 4.1.

5.2.13 Time Limits:

5.2.13.1 The contestant has two (2) minutes to start his/her engine and become airborne. If after two (2) minutes the contestant is unable to start the engine, they will move to the end of the round rotation. If the contestant fails to start a second time, they shall receive zero for the round.

5.2.13.2 The contestant has one (1) minute from the time the wheels leave the ground during takeoff to enter the aerobatic airspace.

5.2.13.3 There shall be no time limit while in the aerobatic airspace.

5.2.13.4 The contestant has two (2) minutes between leaving the aerobatic airspace and touchdown for landing, unless required to hold upon command from the appropriate official.

5.2.13.5 Prior to entering the aerobatic airspace, between sequences, and prior to landing, pilots shall only be allowed to perform the following trim and positioning manoeuvres:

- Turns;
- Half Cubans with only a single ½ roll on the 45 down line;
- Reverse Half Cubans with only a single ½ roll on the 45 up line;
- Half loops up or down (Immelman or Split S) with only one half roll on entry or exit;
- Single half roll to inverted immediately prior to entering the aerobatic airspace for the case in which an inverted entry to the first manoeuvre is required;
- A vertical up or down line with a simple push/pull for entry and exit. A single 1/2 roll is allowed on this vertical line only if required to orient the aircraft properly for entry to the first manoeuvre.

Exceptions to this limitation may only be directed by the CD or line boss in the normal course of safely managing the airspace. Pilots will follow such directions and no penalty will apply.

Turnaround manoeuvres may not be performed at low altitude or directly in front of the judges. No other aerobatic manoeuvres are allowed immediately following the airplane breaking ground except for the Four Minute Freestyle. Any infraction shall result in a penalty of zeroing the round.

The intent here is to prevent anything that may be viewed as practice and hence give one competitor an advantage over another. Therefore, snaps, spins, point rolls, Humptys, Tailslides, etc, etc.... may never be executed after breaking ground and before entering the sequence, between sequences or after completing the sequence(s) and prior to landing.

5.2.14 Point System:

5.2.14.1 All classes shall have the scheduled manoeuvres scored on a scale of 10-0. Half (.5) points may be used in judging. Points are deducted for imperfections as per the Scale Aerobatics Official Flying and Judging Guide.

5.2.14.2 Degree of difficulty factor (K-factor) values shall be assigned to individual manoeuvres based upon the current FAI catalogue of manoeuvres, with modifications as required by the International Miniature Aerobatic Club (IMAC). When calculating contestant scores, each individual manoeuvre score shall be multiplied by its K-factor. The flight score shall be the result of summing the K-factored (manoeuvre score multiplied by K-factor) scores.

5.2.15 Determining Placement:

5.2.15.1 Sequence scoring.

(a) Scoring –The Official IMAC Contest guide shall be used to determine the number of sequences to be scored (drop schedule) and the weight of the unknown(s) based on contest category (2 day, multi-day, regional, etc).

Total Sequences flown	Number of Sequences to drop
Less than Three (3)	Zero (0)
From three (3) to five (5)	One (1)
Six (6) and greater	Two (2)

(b) Unknowns – Each unknown sequence shall be flown once. The Official IMAC Contest Guide shall be used to determine how the known scores and unknown scores are combined based on contest category.

(c) Combined Scores – The highest combined scores will determine the winner.

(d) Normalization – All sequences will be normalized to 1000 as outline in Rule 16.4.

5.2.15.2 In the case of ties, the best non-scored sequence of the contestant shall be used to determine the winner.

5.2.15.3 The same set of judges shall judge each round. Judges may be rotated between rounds.

5.2.15.4 Each sequence shall be normalized to a standard 1000 points. The pilot with the highest raw score receives 1000 points for the round. Each pilot thereafter shall have their raw score divided by the high raw score giving a percentage of that high raw score, which is then multiplied by 1000 to get the normalized score. Scores shall be rounded to two (2) places of decimal accuracy. For example: Contestant A wins the round with a raw score of 4850 points. Contest B is second with 4766.5 points. Contestant A receives 1000 points for the sequence. Contestant B's score is 982.78 points (4766.5 divided by 4850 = 0.982783 * 1000 for 982.783, which rounded to two (2) places of decimal accuracy for a final score of 982.78).

5.2.16. Flight Pattern:

5.2.16.1 A contest shall include one (1) or more rounds of Known sequences and may include one (1) or more Unknown sequences. Any given unknown sequence can only be flown once per contest.

5.2.16.2 Compulsory Known Manoeuvre Sequences are defined by rule 3.3.

5.2.16.3 Optional Unknown Manoeuvre Sequences shall include separate Sportsman, Intermediate, Advanced, and Unlimited sequences, each consisting of up to 15 manoeuvres.

(a) Unknowns shall be distributed the day of the contest or the night before to allow pilots to mentally fly and visualize them. If a contestant is found to have practiced the Unknowns with a flying model or on a computerised flight simulator, that contestant will be disqualified from the entire contest.

(b) Flight order for the Unknowns should be established by random drawing.

5.2.16.4 The contestant must fly his entire flight according to the established flight schedule for his particular class and in the sequence listed. Manoeuvres that are executed out of sequence, or not executed as required by the sequence, will be zeroed. Remaining manoeuvres that are flown in their appropriate area and in the appropriate order following the zeroed manoeuvre will be scored.

5.2.16.5 Takeoff and landing are not to be considered judged manoeuvres. It is not necessary for the judges to see the aircraft take off or land. The aircraft may be carried to the takeoff point, and carried from the landing area, if so desired.

5.2.17 Four (4) Minute Freestyle Program:

5.2.17.1 The four (4) Minute Freestyle Program is a Show Time separate event. It is an unrestricted, individually crated sequence in which Anything Safe Goes! To be eligible to participate and compete in this event, the competitor must also compete in one of the five IMAC categories of precision sequence flying at the same event. It should have separate awards when offered. It is graded on the following criteria:

(A) Technical Merit {90 K}

- (1) Complete Use of the Flight Envelope Utilizing the Exploitation of Aerodynamic and Gyroscopic Forces (20 K). The pilot is expected to make full use of the flight envelope of the aircraft. This means flying the full range of airspeeds and accelerations permitted.

Program time should be divided between high and low speeds, high and low G manoeuvres, and both positively and negatively G loaded flight segments. The flight should include the demonstration of controlled flight beyond the stall boundary by use of autorotation or other high angle of attack manoeuvres.

The judge will deduct points if any of these areas are noticeably under utilized.

The pilot is expected to show movement of the aircraft about all axes using both conventional aerodynamic controls and propeller-generated gyroscopic forces. Higher grades will be given to pilots able to make use of all these effects through a wide range of aircraft attitudes and flight paths. Repeated use of any such forces in the same or similar attitudes should result in lower scores.

- (2) Execution of Individual Manoeuvres (40 K). It should be clear that the manoeuvres flown were, in fact, intended and fully under the pilot's control. Higher marks will be given for this objective when individual manoeuvre elements are started and finished on obviously precise headings and in well defined attitudes.

When, for example, gyroscopic manoeuvres are allowed to decay into imprecise, poorly defined autorotation, marks should be deducted for poor execution. Marks should also be deducted if it appears that the pilot has relinquished control the aircraft at any time.

- (3) Wide Variety of Figures Flown on Different Axes and Flight Paths (30 K). Many different figures should be completed in the time available. These should include manoeuvre elements of many different kinds and should use many different flight paths and axes.

Lower marks should be given to a pilot who used only one or two principal axes of flight. However, the use additional axes within the performance zone must be clear and precise, not giving the appearance of being used by chance.

Marks should also be deducted if any particular manoeuvre element is overused or continues for an excessive period of time. For example, higher marks would be given in the event of a two-turn flat spin followed by something else, than to a multi-turn spin that simply took up more time.

(B) Artistic Impression {90 K}

- (1) Pleasing and Continuous Flow of Figures with Contrasting periods of Dynamic and Graceful Manoeuvres (50 K). In a precisely flown sequence, the completion of a figure will be well described when movement about an axis ceases and a particular attitude is briefly held. The start of the next figure or manoeuvre should then begin without any prolonged period of inactivity caused by the need to reposition the aircraft or reorient the pilot. Marks will be deducted for any obvious period of level flight, or inactivity, required between figures.

In a musical symphony, the listener's mood may be changed by contrasting fast and slow movements. Similarly, in a 4-minute Free Program, the judge should be treated to a flight that causes different reactions. While some manoeuvres involve very high speeds, sudden attitude changes and rapid rotations, others involve slower speeds or more gentle transitions. Higher marks will be given to a pilot who finds time in his program for showing such differences of mood and pace. Marks should be deducted in this category for a flight that shows no such distinctions.

Higher marks should be given for choreography with the music to enhance the flight, and the flight choreographed to enhance and present visual impressions where both the music and aircraft are flowing together with each other and acting as a unified entity to display a harmonious presentation.

- (2) Presentation of Individual and Combinations of Figures in Their Best Orientation and Optimal Position (40 K). Figures can give different impressions when seen from different viewpoints. For example, a climbing inverted flat spin looks most impressive when the top surface of the aircraft can be seen. A loop flown in a plane inclined at 45 degrees to the vertical is best appreciated when it is flown on the Y-axis. Marks should therefore be deducted if the judge is not shown a figure in its best orientation.

Each figure has an optimum from which it is best viewed. For example, a loop flown overhead does not give the same pleasing geometry as one flown further distant. Similarly, a figure flown near the upper height limit will cause discomfort when flown at the near edge of the performance zone; a low-level horizontal figure is better seen from close by than far away. Higher marks will therefore be given when individual figures are optimally placed, while judges should deduct marks when it appears that a figure is not well placed or positioned.

(C) Positioning {20 K}

- (1) Symmetry of the Presentation Utilizing the Performance Zone to Maximize the Audience and Judges Perception, Reception, and Viewing of the Program (20 K). Highest marks will be given when the sequence as a whole is balanced evenly to the left and right of the judges; direct line of vision towards the centre of the performance zone. Marks should be deducted if, by design or by the influence of the wind, a pilot's program is noticeable biased to left or right.

The greater the degree of symmetrical, it may also be spread too far to either side, so that some manoeuvre elements are flown outside the performance zone, thus making them difficult to see and interpret. Figures may also be flown on the direct line of vision but very distant. Any part of the flight that is flown at such distances should be penalized for each excursion. The entire program should be positioned so as to maximize both the audience and judges perception and reception of the flight as a whole.

5.2.17.2 Judging the Four (4) Minute Free Program.

- (a) Any number of judges can be utilized. As more judges that are used, the overall score average will be less influenced by a single judge. It is recommended that seven (7) be used. For final score tabulation it is recommended that the high and low score per judging criteria category be discarded, and the remaining scores be multiplied by their K factors and added together to obtain the final score.
- (b) Each criteria will be judged from ten (10) to zero (0) in 0.1 increments, i.e., 8.7, 7.9, 9.8m etc.
- (c) If the pilot lands any time prior to 3 minutes 30 seconds (three and one-half minutes) the judges score is prorated. Example: the pilot lands at the three (3) minute time. The judges will score the contestant as though he flew four minutes. The score room will tabulate the scores normally and the pilot will receive three-fourths (75%) of the judges score for his final score. If the pilot lands any time after three and one-half minutes there is no penalty. The judges will stop scoring when the timer announces "Time" at the four minute mark. Another Example:
If the pilot lands at the two minute mark, he will receive 50% of the judges score.
- (d) Specific circumstances that will Disqualify (DQ) the competitor's flight.
 - (1) If the plane crashes, it is a Disqualification (DQ).
 - (2) If the plane goes behind the deadline, it is a DQ.
 - (3) If the pilot performs dangerous or unsafe manoeuvres or high energy manoeuvres directed at the judges or spectators, it is a DQ. (As determined by a majority of the judges and/or the CD).

5.2.18 AEROBATICS OFFICIAL SCALE FLYING AND JUDGING GUIDE

This can be obtained from the IMAC website at www.imacuk.org

5.2.19 The IMAC 2014 Schedules

- (a) Basic
- (b) Sportsman
- (c) Intermediate
- (d) Advanced
- (e) Unlimited

5.2.19.1 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 F3D PYLON RACING

Note: The F3D class rules can be downloaded at www.fai.org/fai-documents# or obtained direct from BMFA Head Office

Exhaust Specifications

For F3D race meetings, the use of exhaust systems conforming to either 2009 or 2010 FAI rules will be accepted for use in all UK F3D race events.

However, contestants competing in the team trial selection process for the BMFA F3D British Team must use models fully compliant with current FAI F3D regulations.

5.3.3 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.

5.3.3.0 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.

5.3.3.1 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.

5.3.3.2 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.

5.3.3.3 Fuselage

5.3.3.3.1 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.

5.3.3.3.2 Cowls

There is no requirement to cowl the engine.

5.3.3.3.3 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.

5.3.3.4 Lifting Surfaces

5.3.3.4.1 Area of Surfaces

Total projected area of the lifting surfaces (wing and horizontal tail combined) shall be a minimum of 34 dm². 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.

5.3.3.4.2 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.

5.3.3.4.3 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.

5.3.3.5 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.

5.3.3.6 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.

5.3.3.7 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.

5.3.3.8 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.

5.3.3.9 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.

5.3.3.10 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 "I" 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.

5.3.3.11 Competitors

- (a) A race team shall consist of a pilot and 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.

5.3.3.12 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.

5.3.3.13 Fuel

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

5.3.3.14 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.

5.3.4 CLUB 2000 PYLON RACING RULES (Originated by the Club 2000 Assoc.)

5.3.4.1 Aims

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

5.3.4.2 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.

5.3.4.3 **Flying Controls:**

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

5.3.4.4 **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.

5.3.4.5 **Spinners:**

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

5.3.4.6 **Weight:**

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

5.3.4.7 **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.

5.3.4.8 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 be used by all competitors. No other fuel than that supplied in the official container, is to be used.

5.3.4.9 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.

5.3.4.10 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.

5.3.4.11 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.

5.3.4.12 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.

5.3.4.13 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.

5.3.4.14 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.

5.3.4.15 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.

5.3.4.16 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 be marked to eliminate further processing the airframe.

5.3.4.17 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 "	6	"	4 to count
7 "	8	"	5 to count
9 "	10	"	6 to count
11 "	12	"	8 to count

5.3.4.18 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.

5.3.4.19 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.

5.3.4.20 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.

5.3.4.21 Interpretation of the rules:

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

5.3.5 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.

5.3.5.1 **Propeller:** Add the following paragraph to 5.2.4.4

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.

5.3.5.2 **Electric power:** Add the following paragraphs to 5.2.4.7

- (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

5.3.6 **QUIET QUICKIE 500**

5.3.6.1 **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.

5.3.6.2 **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.

5.3.6.3 **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.

5.3.6.4 **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.

5.3.6.5 **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.

5.3.6.6 **Weight**

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

5.3.6.7 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).

5.3.6.8 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.

5.3.6.9 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.

5.3.6.10 Race Course and Procedure

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

5.3.6.11 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.

5.3.7 Class Q500E (Quickie 500 Eurocup)

5.3.7.1 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.

5.3.7.2 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.

5.3.7.3 Drive train

5.3.7.3.1 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.

5.3.7.3.2 Motor Shut-off

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

5.3.7.3.3 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.

5.3.7.3.4 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).

5.3.7.3.5 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.

5.3.7.4 Fuselage

5.3.7.4.1 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.

5.3.7.4.2 Fairing

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

5.3.7.4.3 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.

5.3.7.5 Main wing

5.3.7.5.1 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.

5.3.7.5.2 Wing span

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

5.3.7.5.3 Wing thickness

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

5.3.7.6 Weight

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

5.3.8 E2K Electric Pylon Racing

5.3.8.1 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).

5.3.8.2 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 (19.36dm²).

5.3.8.3 Power train

- 3-1 Batteries – Any battery may be used with a maximum of 4 cells and that, including any attached wires and connectors, does not weigh more than 270gms.
- 3-2 The only motors permitted will be:-
 - Turnigy SK2526-1400kV Aerodrive XP Outrunner,
 - Overlander Thumperv V2 T 3536/5 1450kV,
 - 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 Speed controller choice is free.
- 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.

5.3.8.4 Propeller

- 4-1 The only allowable propeller is the Radio Active Manufacturing RAM 8 x 6 (203 x 152) i/c 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).

5.3.8.6 Radio

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

5.3.8.7 Materials

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

5.3.8.8 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

5.3.8.9 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.

5.3.8.10 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.

5.3.8.11 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.

5.3.8.12 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.

5.3.8.13 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.

5.3.8.14 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.

5.3.8.15 Protective Clothing

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

5.3.8.16 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

5.3.8.17 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.

5.3.8.18 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 F3C class rules can be downloaded at www.fai.org/fai-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

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, the protester may request that a jury is constituted, according to BMFA General Rules, and the CD will appoint three persons to form that jury.

5.4.3 European Sportsmans Helicopter

5.4.3.1 Object

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

5.4.3.2 General Rules

5.4.3.2.1 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.

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

5.4.3.2.3 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.
- 5.4.3.2.5** 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.
- 5.4.3.2.6** Judges should know the score requirements as defined in the latest issue of the European Sportsmans schedule.
- 5.4.3.2.7** All manoeuvres are marked out of 10 points. Points are lost as decided by the individual judge in accordance with the current rules.

5.4.3.2.8 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.

5.4.3.2.9 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.

5.4.3.2.10 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.

5.4.3.3 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.

5.4.3.4 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 radius 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 10m straight 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):

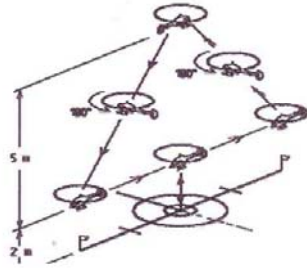
Rotor shaft points to inside 1 m circle: 10 points

Rotor shaft points to inside 3 meter circle: 8 points

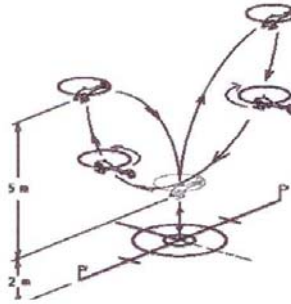
Rotor shaft points in other cases: 6 points

DIAGRAMM SCHEDULE NEW PS

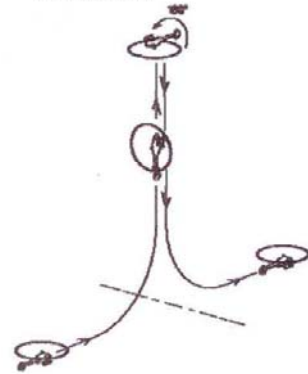
N PS1 TRIANGLE



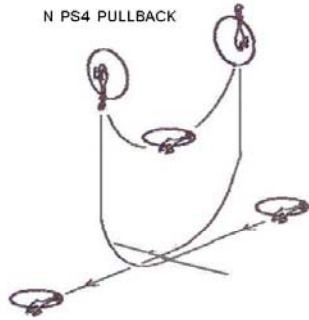
N PS2 FLOWER



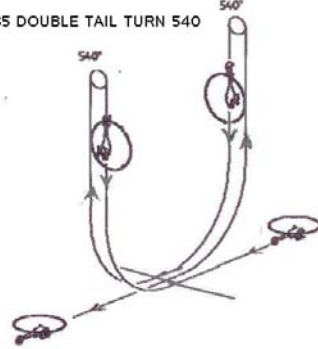
N PS3 CANDLE



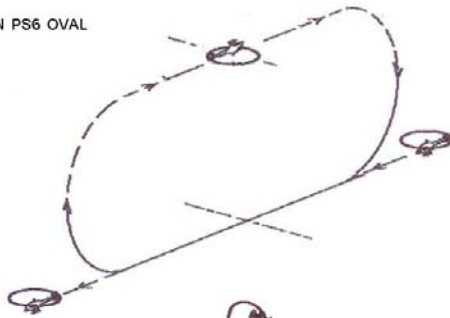
N PS4 PULLBACK



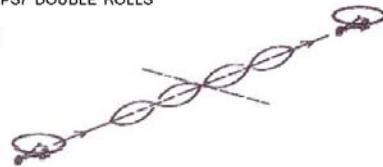
N PS5 DOUBLE TAIL TURN 540



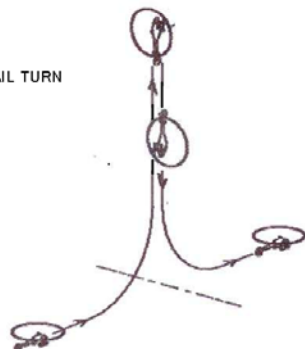
N PS6 OVAL



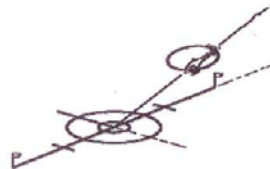
N PS7 DOUBLE ROLLS



N PS8 TAIL TURN



N PS9 AUTOROTATION



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) Workmanship10 marks
- (1.2) Finish.....10 marks

5.5.2.2 Static Flotation Test (2 minutes duration)

- (2.1) Model attitude on water5 marks
Waterline on float not excessively low at bow or stern.

5.5.2.3 Waterborne Operation

- (3.1) Navigability8 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-off12 marks
Controlled acceleration as model rises on to 'step', planes and lifts off smoothly with a steady climb-out.
- (3.3) Alighting10 marks
Good approach with clean touch-down and minimum bounce.

5.5.2.4 Flight Test

- (4.1) Smooth manoeuvring and control response8 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 water5 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-off12 marks
Controlled acceleration as model rises on to 'step', planes and lifts off smoothly with a steady climb-out.
- (3.3) Alighting10 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 size15 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 turn8 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 run 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 3.5cc 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. Check 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 be 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, 5cc 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 Power Achievement scheme '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 two wheels.

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 not 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 Power Achievement scheme '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.

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 two wheels.

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
- (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 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 not 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 the wheels touch 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 15 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 your final spin and once your power on time has been used up, should you open the throttle from its' bottom stop again, your 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 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 Dead Stick 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 1 point 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 the wheels touch 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 wheel back in the marked square before the minute is up. If the pilot is still flying and 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 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, you go over 21 (bust) then you score zero for the event!

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;

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

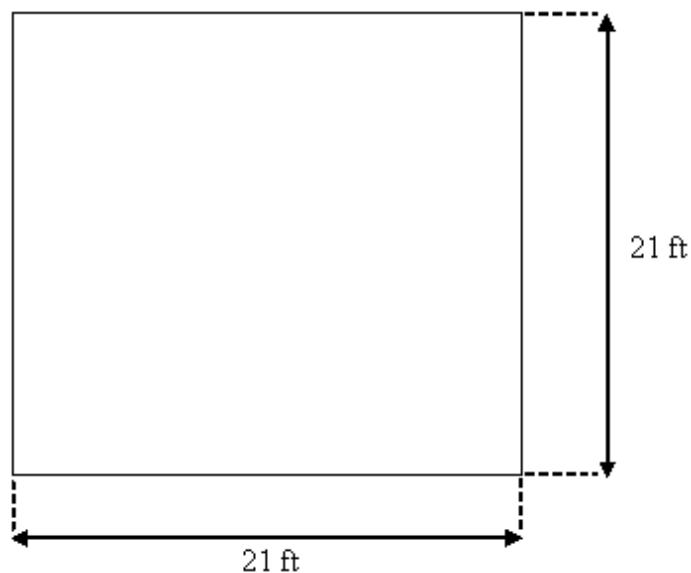
The individual event scores will be added together to get the overall total. The pilot with the most overall points in each class will be the winner

5.7.5 Pilot's Rules For All Events

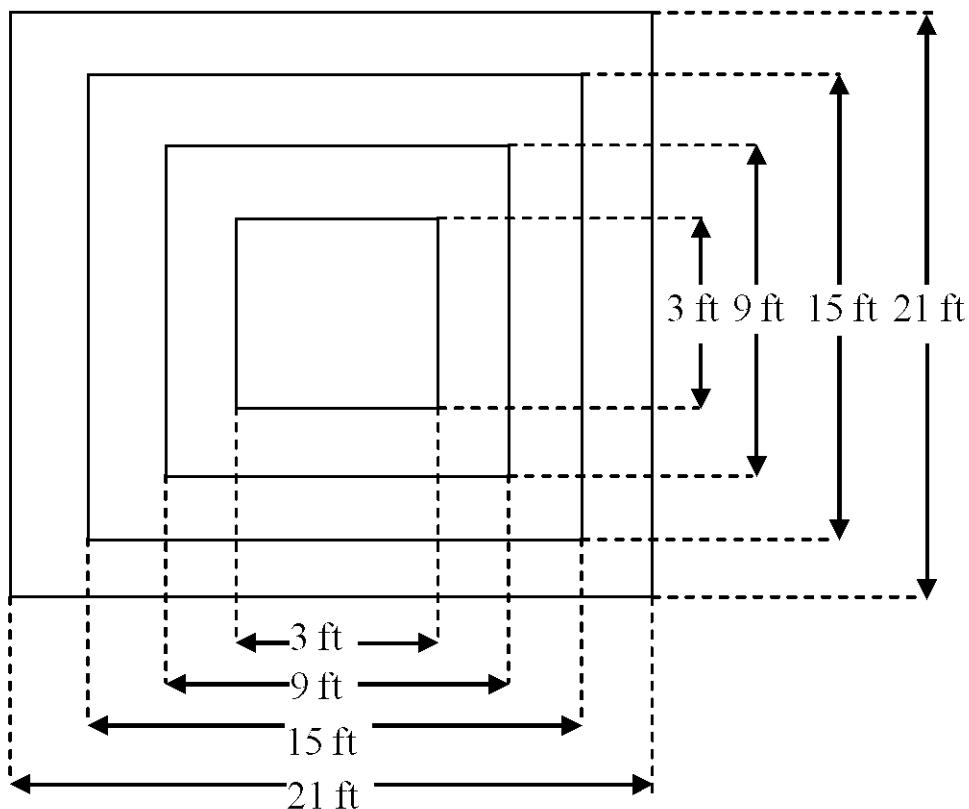
- (a) Every pilot must have a helper for all flights. No helper = no flight.
- (b) The model must be returned to the pits area immediately on completion of the flight and the frequency peg and transmitter returned to the official compound.

- (c) Hard Hats must be worn by pilots, helpers and marshals for every flight.
- (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.

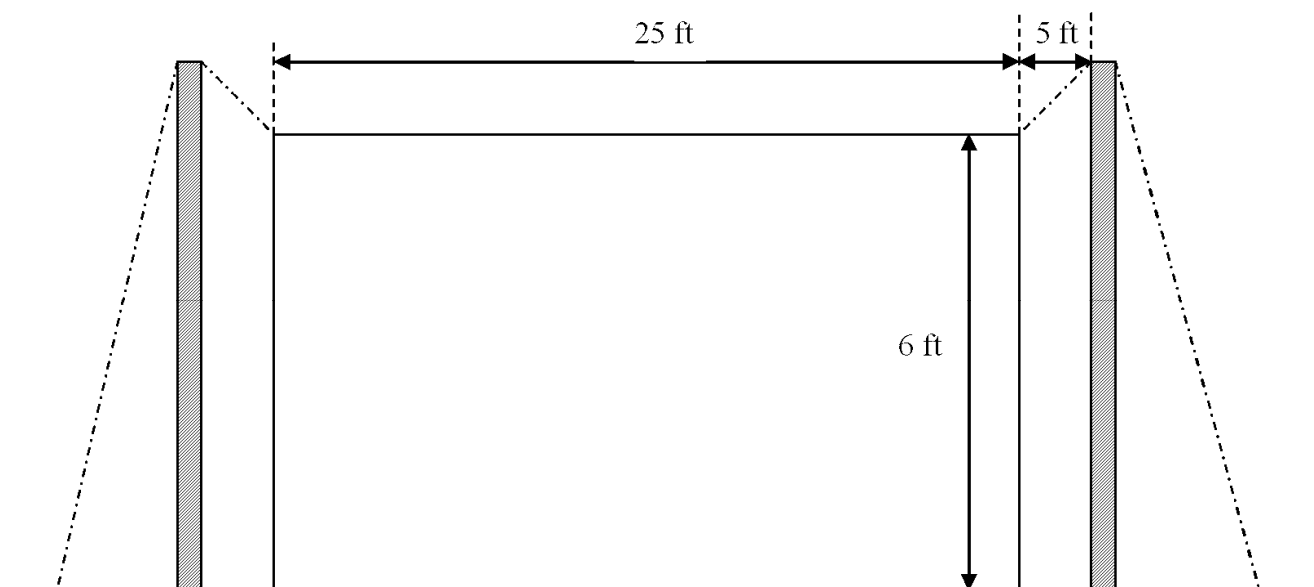
Dimensions of Marked Square



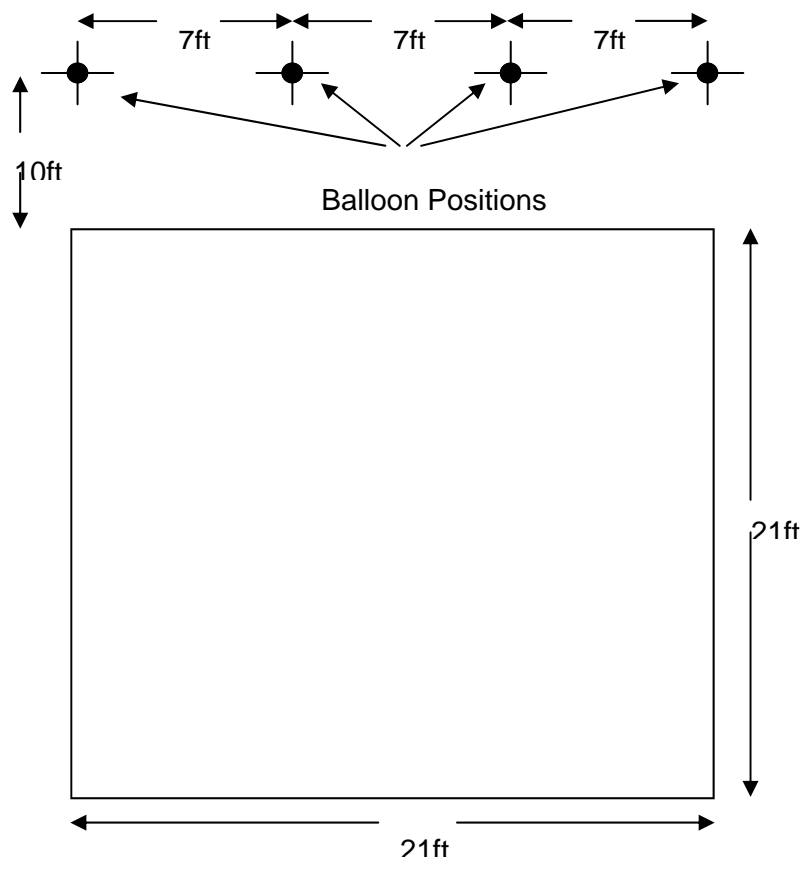
Dimensions of marked square for Spins & Spot, Doughnut Drop & Blackjack



Dimensions of limbo gate



Touch and go bang layout



NOTES

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