



# Competition Rules

Edition 17 Nov 2000  
AL1

**ROYAL AIR FORCE MODEL AIRCRAFT ASSOCIATION**

**RECORD CLAIM**

Rank..... Name/Initials.....

Station ..... RAFMAA/SMAE Number .....

Date of Flight ..... Location .....

Class of Model .....

Record Being Claimed .....

Signature of Claimant .....

Signature of Timekeeper .....

Timekeeper's Name and Initials .....

RAFMAA/BMFA Number .....

Officer IC Club or Event .....

Signature .....

Name and Initials .....

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To be completed by the RAFMAA Committee:

Claim Ratified ..... Date ..... Signed

..... Chairman RAFMAA

..... President RAFMAA

Record file updated ..... Comp Sec.

## SECTION 10

### RECORDS

1. There are 2 types of records which are maintained by the RAFMAA: Competition Records and Absolute Records.

2. **Competition Records.** For events where it is appropriate to maintain records, e.g. speed and duration events, the Comp Sec will extract from competition result sheets details of the best performance in each class. These will be continuously updated and published from time to time in the Newsletter. Competition Records can only be gained in RAFMAA competitions.

3. **Absolute Records.** Absolute Record flights may be attempted and claimed for any class of model regardless of whether the class is flown in RAFMAA competition. Record flight attempts can be made at any time but they must be supported by at least 2 witnesses including the timekeeper and the Officer IC the Club or the event organiser. Claims in the format shown below should be sent to the Comp Sec. If the claim is ratified the claimant will receive a certificate to that effect. Details of absolute records will be published from time to time in the Newsletter.

4. **Record Claim Format.** The format in which claims are to be submitted is shown overleaf.

# RAFMAA COMPETITION RULES EDITION 17

## ISSUED NOV 2000

AL 1

**TABLE OF CONTENTS**

**RAFMAA COMPETITION RULES**

**Edition 17, Issued Nov 2000**

**SECTION 1**

**GENERAL**

1.	Applicability of Rules.	1
2.	Conduct of Events.	1
3.	Builder of the Model.	1
4.	Multiple Entry.	1
5.	Number of Models.	1
6.	Proxy Flying.	2
7.	Model Aircraft Noise.	2
8.	Radio Control Equipment.	2
9.	Frequency Allocation.	2
10.	Eligibility for Competitions.	2
11.	Late Entry.	2
12.	General Conduct.	3

**SECTION 2**

**RADIO CONTROL THERMAL SOARING**

	Classess	4
	General Ruls	4
	RAFMAA Rules	4

**SECTION 3**

**RADIO CONTROL SLOPE SOARING**

	Classes	7
	General Rules	7
	RAFMAA Rules	7
	Multi-Channel Aerobatics.	
8		
	Cross Country.	
8		
	Pylon Racing.	9
	Power Scale Soaring.	
10		
	Static.	
10		
	Flight 1.	
10		
	Flight 2.	
10		

**SECTION 4**

**FREE FLIGHT**

	Classes	11
	General Rules	11

21.

**Indoor.**

EZB  
C02 Duration  
Open Scale  
Hand Launched Glider  
Helicopter  
Peanut Scale

Zot's Pot  
None  
Doug McHard Trophy  
Bob Vian Shield  
Modellers' Den Trophy  
Lindsey Smith Bowl

22.

**General Awards.**

Victor Ludorum  
Participants' Cup  
Best Apprentice/Junior  
Thermal Champion  
Slope Champion  
Free Flight Champion  
R/C Power Champion  
Control Line Champion  
Indoor Champion  
Honorary Members' Trophy  
Inter-Station Winners  
Inter-Station Runners-Up

Victor Ludorum Cup  
John Rumble Trophy  
Apprentice Shield  
Training Command Trophy  
Otto Lilenthal Shield  
Graham White Trophy  
Leconfield Trophy  
Marham Trophy  
Vice President's Cup.  
Watton Cup  
Bob Vian Memorial Trophy  
Inter-Command Trophy

23.

**Joint RAFMAA / BMFA Awards.**

FAI F1A (Glider)  
FAI F1B (Wakefield)  
FAI F1C (Power)

RAF Flying Review Trophy  
Thurston Trophy  
RAF Cup

## ALLOCATION OF TROPHIES

### 14. Thermal R/C Glider.

Open Thermal	Cranwell Cup
100s	100s Trophy
Scale	None
Mini Glider	Eppler Cup
Duration Task	FEAF Trophy
Electrslot	Baddley Cup
Thermal Cross Country	FEAF Shield

### 15. R/C Slope Soaring.

Scale Glider	Slingsby Trophy
Two Channel Aerobatics	Harry French Tankard
Multi-Channel Aerobatics	RAFSC Victor Ludorum Trophy
Slope Cross Country	Inter-Station Runners-Up Trophy
Pylon Racing	Alcock trophy
PSS	
Stans Plank	

### 16. Free Flight.

Open Rubber	Open Rubber Cup
Open Glider	Open Glider shield
Open Power	Wilmott Mansour Trophy
F/F Scramble	Leconfield Plate

### 17. R/C Power.

F3A Aerobatics	Malta Cup
Standard Aerobatics	SMAE Trophy
Clubman Scale	Hullavington Trophy
Touch and Go	Radio Modeller Trophy
Sportsman Aerobatics	Barry Sheppard Shield
Open Pylon	Tom Whittle Trophy

### 18. Concours D'Elegance.

Concours D'Elegance	Aeromodeller Trophy
---------------------	---------------------

### 19. Control Line.

Novice Aerobatics	Hendon Cup
Goodyear	Mouse Plate
Speed	Speed Cup
Combat	Langley Shield
Mini Goodyear	None
Basic Aerobatics	None

## SECTION 5

### RADIO CONTROL POWER

Classes	13
General Rules	13
BMFA-Rule Variations	13
RAFMAA Rules	13
Aerobatic Rules	13
Sportsman Schedule Manoeuvre Descriptions	15
Standard Schedule Manoeuvre Descriptions	19
Advanced Schedule Manoeuvre Descriptions	25

MULTI TASK 'FUN FLY' COMPETITION	35
OPEN PYLON.	38

## SECTION 6

### CONCOURS D'ELEGANCE

AIM.	40
NUMBER OF MODELS.	40
SCORING.	40
DOCUMENTATION.	40
QUALIFYING FLIGHT.	40

## SECTION 7

### CONTROL LINE

CLASSES	41
GENERAL RULES	41
BMFA RULE VARIATIONS FOR RAFMAA COMPETITIONS	41
RAFMAA RULES	42

## SECTION 8

### INDOOR FLYING

CLASSES	44
GENERAL RULES	44
BMFA RULE VARIATIONS FOR RAFMAA COMPETITIONS	44
RAFMAA RULES	44

## SECTION 9 TROPHIES AND PRIZES

GENERAL	46
SPECIAL INDIVIDUAL AWARDS	46
Inter-Station Awards	47
Joint RAFMAA / BMFA Awards	47
Allocation of Trophies	48

## SECTION 10

RECORDS	50
RECORD CLAIM	50



## SECTION 9

### TROPHIES AND PRIZES

#### GENERAL

1. Trophies are awarded annually to the winners of each major event in the competition calendar. In addition, a number of special awards are made based on a points scoring system.
2. Prizes, purchased from RAFMAA funds, are allocated on the basis of the support enjoyed by each individual event. This allocation may vary from year to year at the discretion of the Committee.
3. Full and Associate Members of the RAFMAA gain points which count towards both individual and inter-station awards by entering the events list in the competition calendar. Points are awarded as follows:

1st	15 points
2nd	12
3rd	9
4th	6
5th	5
6th	4
7th	3
8th	2
remainder	1 point (provided an attempt is made to fly)

4. Trophies, prizes and points are only awarded in events that have at least 3 entrants.
5. Return of Trophies. Annual trophy winners are responsible for ensuring that trophies in their care are well looked after and that the trophies are cleaned and returned to the Airmen's Representative in time for the following year's prize giving.

#### SPECIAL INDIVIDUAL AWARDS

##### 6. **Victor Ludorum.**

The Victor Ludorum Trophy is awarded to the competitor judged to be the best all-round modeller. For this purpose, points are totalled from the best 2 achievements in each of the 5 flying disciplines and the best achievement in Concours d'Elegance. The flying disciplines are:

- a. R/C Glider.
- b. Free Flight.
- c. R/C Power.
- d. Control Line.

## SECTION 1

### GENERAL

#### 1. Applicability of Rules.

RAFMAA competitions are run in accordance with FAI, BMFA (formerly SMAE), BARCS, BEFA, GBRCAA or RAFMAA rules. This book specifies which set of rules is applicable for each class flown within the RAFMAA, details those rules which are specific to RAFMAA events and also defines any waivers which are applied for certain classes. From time to time the BMFA, BARCS and GBRCAA rules applicable will be published in the RAFMAA Newsletter; these should be retained for reference. However, Officers IC clubs are encouraged to obtain their own copy of the BMFA Rule Book which can be obtained by post from the BMFA. Amendments to this Rule Book will also be published via the Newsletter. Competitions will be run to the latest set of rules which have been promulgated in the Newsletter. Anyone in doubt or unable to obtain the relevant rules should contact the RAFMAA Competition Secretary. All references to male modellers apply equally to female modellers.

#### 2. Conduct of Events.

The conduct of all events may be varied at the discretion of the Contest Director (CD). Examples of such variations are:

- a. Flying only one round of a multi-round event due to unsuitable weather.
- b. A reduction in the number of judges.
- c. Changes to suit local conditions.

#### 3. Builder of the Model.

It is a BMFA general rule that the competitor must construct his/her own model has been rescinded by the BMFA and is therefore no longer applicable in RAFMAA competitions.

#### 4. Multiple Entry.

With the exception of certain RAFMAA events for which this rule is waived, a model may be entered only once in an event, i.e. team or club entries of one model with several flyers is prohibited.

#### 5. Number of Models.

A competitor may enter only one model in each event with the following exceptions:

- a. Certain classes permit use of a spare model.
- b. In Scale and Concours events the CD may allow a competitor to enter more than one model depending on the overall number of competitors. If more than one entry is permitted, only the highest placed model will gain points towards trophies and prizes and lower placed entries will be discounted from the final ranking.

6. **Proxy Flying.**

If having entered a competition, a member is unable to attend due to illness or Service commitments he may have his model flown by another competitor subject to the following limitations:

- a. The intention to proxy fly must be approved by the CD before the event.
- b. Proxy flying will only be permitted in the following events:
  - (1) All Free Flight events except HLG and Scramble.
  - (2) Concours d'Elegance.
  - (3) All indoor events except HLG.

7. **Model Aircraft Noise.**

Any model which emits a noise measured to be in excess of 96 dB(A) at 3 metres over tarmac or 94dB(A) over grass may not be operated at an RAFMAA competition.

8. **Radio Control Equipment.**

For RAFMAA competitions in the UK only radio control equipment which conforms to the specification and frequency bands authorised for operation in the UK may be used. Additionally, where a failsafe is installed and operational in a power model it MUST be set to top the engine on loss of signal. This will be tested before the first flight in each competition.

9. **Frequency Allocation.**

At the Annual Championships the following frequency allocation will be applied:

- a. 27 MHz Power - brown, red  
Glider - orange, yellow, green.
- b. 35 MHz Power - Any odd numbered frequency.  
Glider - even numbered channels.
- c. UHF by agreement with the transmitter control supervisor.

10. **Eligibility for Competitions.**

All Full and Junior Members are eligible to enter all RAFMAA competitions and compete for trophies and prizes. Honorary Members may fly in all events and compete for the Honorary Members Trophy. Additionally MOD Civilian Members may compete but will not gain Interstation points or be eligible for trophies

c. **Attempts.** Two attempts may be made for each official flight; an attempt may be called if the flight time is less than 10 seconds.

d. **Timing.** If the model comes into contact with any part of the building other than the floor, and free movement ceases, the timekeeper shall continue to time the flight for a further 10 seconds. If the model remains in contact with the building, timing will cease, and 10 seconds will be subtracted from the final time. Should the model release itself from the building within 10 seconds, then timing will continue.

## **SECTION 8**

### **INDOOR FLYING**

#### **CLASSES**

1. The following classes and rules apply:
  - a. **BMFA Rules.**  
  
EZB  
CO2 Duration  
Hand Launched Glider
  - b. **FAI Rules.**  
  
Peanut Scale  
Open Scale
  - c. **RAFMAA Rules.**  
  
Helicopter.

#### **GENERAL RULES**

2. Model specifications are as defined in BMFA Contest Rules Sections 3 and 5 except as modified below.

#### **BMFA RULE VARIATIONS FOR RAFMAA COMPETITIONS**

3. **Open Scale.** A competitor may enter more than one model at the discretion of the CD. If more than one model is allowed, only the model gaining the highest overall marks will count in the final ranking. Models may be powered by CO<sup>2</sup>, Electric or Rubber and flown as a combined class.

#### **RAFMAA RULES**

4. **Helicopter.** There is no BMFA competition for indoor helicopters; therefore, the RAFMAA rules for Helicopter are based on the General BMFA Indoor Free Flight Rules as follows:
  - a. **Specification.** A helicopter is defined as a rubber powered model deriving its lift from a powered rotating surface. No static lifting surfaces are allowed; however, stabilising or anti-torque fins/devices may be used.
  - b. **No of Flights.** The competitor shall be allowed 6 flights, the 2 best flight times being taken for classification.

#### 11. **Late Entry.**

At any event held by RAFMAA, Service personnel may be permitted to enter the event after the event has commenced. Late entry will only be permitted when the late arrival of the competitor is due to essential Service reasons. In all cases the final decision to permit late entry will rest with the CD.

#### 12. **General Conduct.**

RAFMAA competitions are in the main held at RAF stations by permission of the Station Commander. This is a privilege, not a right, and it behoves all competitors to ensure that their standards of behaviour and dress are above reproach; particular attention is to be given to dress standards detailed in Mess Rules.

## SECTION 2

### RADIO CONTROL THERMAL SOARING

#### CLASSES

1. The following classes and rules apply:
  - a. BARCS/BMFA Rules.
    - Open
    - 100s
    - Scale
    - Mini Glider
    - Electroslot
  - b. RAFMAA Rules.
    - Duration Task
    - Thermal Cross Country

#### GENERAL RULES

2. Details of the BARCS Rules in force may be obtained either from the RAFMAA Newsletter or from the Comp Sec or Asst Comp Sec (Thermal).
3. The multiple entry rule is waived for the Duration Task and Thermal Cross Country events.
4. For Open, 100s and Mini Glider events the entrant must be the genuine owner of the model(s) flown but need not necessarily have constructed his own model.

#### RAFMAA RULES

##### 5. Duration Task.

The aim of this event is to make 5 precision flights each of increasing duration and ending with a spot landing. The event is flown at the Main Championships and to enable competitors to fly in other classes, flights may be made at any time during the Championships at the discretion of the Glider CD. The following rules apply:

- a. Models. Any non-powered glider may be used.
- b. Launching. Launching shall be by means of hand tow line, optional pulley system, bungee, or power winch at the CD's discretion.
- c. Tow Lines. The length of hand tow lines or bungees shall be not more than 150

## 7. SCORING GUIDE

- a. Static. Models will be scored for static points prior to the flying phase in accordance with the guide below:

<u>Area</u>	<u>Score</u>
1. Appearance	50
2. Bonus for each year under 10 (per year)	16

- b. Flying. Judges may interpret between suggested marks:

<u>Manoeuvre Appearance</u>	<u>Score</u>
Unrecognisable	0
Marginal	5
Good	10
Very Good	15
Perfect	20

## 8. SPEED

General. The speed event allows any model to participate is open to all types of C/L model. The following rules apply:

- a. Distance. The timed distance for the event is 10 laps for models using 13.5m lines. For lines of other lengths the CD will calculate the number of laps required.
- b. Whipping. Whipping is not allowed; for the duration of the timed laps the handle must be held on the chest.
- c. No of Rounds. The competition will be run over 3 rounds. Each competitor will count his/her best time for 1 round towards the final placing.
- d. Attempts. Each competitor will be allowed 2 attempts in each round. An attempt must be called within 3 minutes of being given the instruction to start.

9. Specialist Speed Models. Specialist Speed models may enter subject to the following restrictions

- a. Engine size. Only plain bearing 1.5cc diesel engines may be used.
- b. Pull Test. Models, lines and handle will be subject to a pull test of 20 times the weight of the model.
- c. Fuel Cut-out. A fuel cutout is advised but not compulsory

b. A motor restraint wire is strongly advised but not compulsory.

## RAFMAA RULES

6. Basic Aerobatics. The contest will be flown over 3 rounds with the aggregate of the best 2 rounds plus the scores from the appearance and construction judging to count towards the final placing. The following rules apply:

a. Pull Test. Before flight each model is to be subjected to a pull test (handle, lines and model) of 5 kgs (11 lbs) for 10 secs.

b. Attempts. 2 attempts are allowed for each round. An attempt must be called before completion of manoeuvre 4 (inside loop).

c. Sequence. Manoeuvres are to be flown iaw current FAI F2B practise: horizontal and vertical eights must be performed with the inside loop first and as the right hand of the two loops; the vertical eight should be performed with the inside loop first and the lower of the two loops.

d. Time Limits. The schedule must be completed within 10 mins from the first attempt to start the engine. The model may be landed, refuelled and re-launched within the time allowance; only the first take off and last landing will attract scores. Manoeuvres after the 10 min period will not score.

e. Undercarriage. Takeoffs and Landings by a model not equipped with an undercarriage will only receive 50% of the available score( max 10 points for each takeoff and landing).

f. Separation Laps There is to be a minimum of 2 laps of level flight (non scoring) between groups of manoeuvres.

g. Schedule. Manoeuvres are to be flown in sequential order to the following schedule:

<u>Manoeuvre</u>	<u>Score</u>
1. Takeoff	20 (10 for hand launch)
2. 2 Laps level flight	20
3. Wingover	20 (Not reverse wingover)
4. 2 Inside loops	20
5. 2 Laps inverted flight	20
6. 2 Outside loops	20
7. 2 Horizontal eights	20
8. 2 Overhead eights	20
9. 1 Square inside loop	20
10. Landing	20(10 without U/C)

metres under a 2 Kg load. The effective length of power winch lines shall be not more than 150 metres under a 2 Kg load.

d. Flights. Each competitor must make 5 flights with the following target times: 2, 4, 6, 8, 10 minutes. Target flight time is to be declared by the pilot within 30 seconds of release from the towline. Once declared this time may not be changed.

e. Attempts. Only ONE attempt is allowed at each flight. An attempt is made when the model leaves the launching hand under the pull of the launching apparatus.

f. Timing. The duration of the flight shall be measured in seconds from the time that the model is released from the tow line until it touches the ground or comes into contact with a solid object in contact with the ground.

g. Scoring. One point is awarded for each second flown up to the flight target limit. One point is deducted from the score for every second flown beyond the target time. One hundred bonus points are awarded for landing within ONE metre of a marked target spot reducing by 5 points for each metre error to a minimum of 30 points at 15 METRES; beyond this ZERO bonus is scored (see table). The distance is measured from the nose of the model when at rest. If the target time is exceeded no bonus will be added to the competitor's score. The competitor's final score is the total sum of the flying scores plus the landing bonuses. The maximum possible score is 2,300 points.

Metres 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 15+  
Error

Bonus 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 ZERO  
points

NB: The model must NOT be stopped on landing (e.g. by feet, kitbags, model boxes, dogs etc.) otherwise ZERO bonus points are scored no matter where the model comes to rest.

## 6. Thermal Cross Country.

The aim of the Thermal Cross Country event is to fly a glider round a course set by the Glider CD in the shortest possible time whilst incurring the lowest number of penalty points. The pilot must also round all the turning points. The event is flown at the Main Championships and to enable competitors to fly in other classes, flights may be made at any time during the Championships at the discretion of the Glider CD except that if more than one round is flown and the course is changed; each competitor must attempt each course to score for that round. The following rules apply:

a. Models. Any non-powered glider may be used with no restriction on the number and usage of functions. Internal ballast is allowed but cannot be altered in any one round. A competitor may use a maximum of 2 models but models cannot be substituted nor parts interchanged between them once an attempt is under way.

b. Launching. Launching shall be by hand tow only. Line length shall not exceed 150 metres measured at a tension of 2 Kg.

c. Helpers. Each competitor may have one helper and one towman; the helper and towman may not change roles during an attempt. The helper may also be the time-keeper at the discretion of the Glider CD.

d. Start. Timing will commence when the model enters the course in flight with the pilot positioned behind the start point on a line at right angles to the line of sight of the first pylon/landmark. A maximum of 3 minutes flying time from tow line release is allowed before the model enters the course. Any number of attempts of less than one minute between tow line release and re-launch are allowed for the first launch of any one round, even if the model has entered the course.

e. Running. The pilot shall not run at any time whilst his model is in the air. Any infringement noted by the time-keepers will attract a penalty of 5 times the duration of the infringement in seconds.

f. Re-launches. Any number of re-launches is permitted but will be noted by the time-keeper and each re-launch will incur a time penalty of 60 seconds. Each launch shall be made from the position that the model comes to rest. If this is impossible due to an obstruction, the time-keeper may move the model to a new position as close as possible to the original on a new line at right angles to the line of sight of the next pylon. Each reposition shall attract a penalty of thirty seconds. If the pilot moves the model other than immediately prior to re-launch, he will be disqualified. Airborne or 'landing' models will have right of way at all times over models at re-launch. Flagrant disregard of right of way will attract disqualification. After a re-launch the model must turn back (if necessary) and re-enter the course in flight at the position where it came to rest.

g. Course Markers. The pilot must round each pylon/landmark himself and must fly the model through 360 degrees around each pylon/landmark, witnessed by the time-keeper. Cutting of corners by pilot or model will require another attempt at that particular pylon.

h. Timing. The timing will cease when the pilot and model have successfully round all pylons/landmarks and both pilot and model cross the starting point on a line at right angles to the line of sight of the last pylon/landmark.

i. Scoring. Each competitor's score will be his total time taken in seconds plus any penalties incurred during the round. If more than one round is flown, the score will be the aggregate of all rounds flown. The winner will be the competitor with the lowest aggregate score. In the event of a tie on points then the competitor with the lower number of re-launches will be deemed the winner.

5. Electro Slot.

a. Only seven cells are to be used with a maximum capacity of 2000mAh. If the battery has no 'official' capacity label on it, then the aircraft will not be allowed to enter the competition.

## SECTION 7

### CONTROL LINE

#### CLASSES

1. The following classes and rules apply;
  - a. BMFA Rules.  
  
British Goodyear  
Mini-Goodyear  
F2E Diesel Combat  
Novice Aerobatics
  - b. RAFMAA Rules.  
  
Speed  
Basic Aerobatics

#### GENERAL RULES

2. Model specifications for BFMA classes are as defined in BMFA Contest Rules Sections 4 and 5. All of the C/L events at RAFMAA competitions have been configured so that only 2 engines are required to enter all of the events: a 1.5cc plain bearing diesel and a 2.5cc ballrace or plain bearing .19<sub>ci</sub> diesel.
3. Safety Precautions. The following safety rules will be strictly enforced at all events:
  - a. No model will be flown if, in the opinion of the CD, it is considered to be structurally unsound presenting a flight safety hazard.
  - b. Any competitor releasing the controls of the model whilst it is in motion will be disqualified.

#### BMFA RULE VARIATIONS FOR RAFMAA COMPETITIONS

4. Mini Goodyear. The age limit is waived and the entrant may either pit or fly. A fuel shut off is permitted and the tank size is not limited. However, the requisite number of pit stops must be made during all races.
5. F2E Diesel Combat. The event will be flown to F2E rules with the following variations:
  - a. Engine size is restricted to 2.5cc ball race or .19<sub>ci</sub> plain bearing diesel engines.

## SECTION 6

### CONCOURS D'ELEGANCE

1. **Aim.**

The aim of this event is to encourage the highest standards of model building. The event is open to any type of flying model aircraft and the marking is such that whilst originality will be rewarded, any well-built and well-finished model will be competitive.

2. **Number of Models.**

Competitors may enter more than one model, subject to the approval of the CD, but only the model achieving the highest score will count in the final ranking.

3. **Scoring.**

Points will be awarded as follows:

- |    |                                      |           |
|----|--------------------------------------|-----------|
| a. | Design:                              | 10 points |
| b. | Workmanship:                         | 30 points |
| c. | Finish:                              | 30 points |
| d. | Original ideas and special features: | 20 points |

4. **Documentation.**

To authenticate design and special feature claims, entrants may furnish proof of original work, e.g. scale drawings, improvements to commercial plans, alterations to kits etc.

5. **Qualifying Flight.**

Models are to make a qualifying flight at the Championships unless, accompanied by a proof of flight acceptable to the CD. The entrant need not be the pilot or flyer, but must have constructed the model. The minimum qualifying flight time is 30 seconds except for indoor scale entries when a 15-second qualifying time is required.

**Note:** Proof of flight from a previous BMFA, National or RAFMAA event will have to be presented to the CD.

## SECTION 3

### RADIO CONTROL SLOPE SOARING

#### CLASSES

1. The following classes and rules apply:

a. **BARCS Rules.**

Scale Glider.

b. **RAFMAA Rules.**

Two-channel Aerobatics  
Multi-channel Aerobatics  
Slope Cross Country  
Pylon Racing.  
Power Scale Soaring

#### GENERAL RULES

2. Details of BARCS Rules in force may be obtained either from the RAFMAA Newsletter or from the Comp Sec or Asst Comp Sec (Slope).

3. The 'multiple entry' rule is waived for all slope soaring events run to RAFMAA Rules except PSS.

4. **Ballast.** All ballast, where used, is to be carried internally secured inside the model. 'Wing profile' ballast is not permitted.

#### RAFMAA RULES

5. **Two-channel Aerobatics.** This event is open to models having only rudder and elevator controls but includes V-tail controlled models with a control mixer system. The following rules apply:

a. After launching his model, each competitor is allowed one minute for it to gain height and then 10 minutes in which to complete the schedule. A re-launch maybe made at any time during a round; however, timing will be continuous and manoeuvre scoring will cease at 10 minutes.

b. The following manoeuvres are to be flown in any chosen order:

Stall turn left  
360 degrees turn  
Stall turn right

- 3 inside loops
- 1 outside loop (may be completed from upright or inverted flight)
- 3 turn spin
- 5 seconds inverted flight
- 1 barrel roll
- Reversal.

c. Each manoeuvre will be scored out of 10 points with a bonus mark out of 10 points for overall presentation and positioning.

d. These rules may be varied at the discretion of the CD to suit local conditions.

e. When more than one round is flown the best scores (up to a maximum of 2 scores) obtained by each competitor will be taken to determine the final placings.

6. **Multi-Channel Aerobatics.**

This even is open to models having 3 or more control functions. The following rules apply:

a. After launching his model, each competitor is allowed one minute for it to gain height and then 10 minutes in which to complete the schedule. A re-launch may be made at any time during a round; however, timing will be continuous and manoeuvre scoring will cease at 10 minutes.

b. The following manoeuvres are to be flown in any chosen order:

- Stall turn left
- Stall turn right
- 2 axial rolls
- 3 inside loops
- 2 outside loops (may be completed from upright or inverted flight)
- 360 degrees turn inverted
- 3 turn spin
- 1 horizontal eight
- 1 cuban eight
- 1 x 4 point roll
- 5 secs inverted flight (straight and level)
- Double Immelmann.

c. Each manoeuvre will be scored out of 10 points with a bonus mark out of 10 points for overall presentation and positioning.

d. These rules may be varied at the discretion of the CD to suit local conditions.

e. When more than one round is flown the best scores (up to a maximum of 2 scores) obtained by each competitor will be taken to determine the final placings.

Group 1: Up to .28 cu in 2 stroke, up to .40 cu in 4 stroke.  
Up to 700 size electric

Group 2: .29-.35 cu in 2 stroke, .41-.45 cu in 4 stroke.  
Over 700 size electric or any brushless electric.

Group 3: .36-.46 cu in 2 stroke, .46-.60 cu in 4stroke.

Group 4: .47 and over in 2 stroke, .61 an over 4 stroke.

Group 5: Any specialist pylon racing model.

(2) Groups 1-4 will be sub-divided into 3 classes by model type:

(a) Low wing aerobatic or delta.

(b) High wing monoplane.

(c) Multi-wing models.

(3) Number of laps to be flown:

Group	Class	Laps
1 .....	a.....	9
	b.....	8
	c.....	7
2 .....	a.....	10
	b.....	9
	c.....	8
3 .....	a.....	11
	b.....	10
	c.....	9
4 .....	a.....	12
	b.....	11
	c.....	10
5 .....	a.....	13
	b.....	12
	c.....	11

One additional lap is to be flown by any model having an engine fitted with a tuned pipe exhaust system or 'mini-pipe'.

f. IC Powered aircraft must have been competitively flown in a RC power event at the Main Championships that year. Concours d'Elegance will not count as a qualifying event. If aircraft did not fulfil these criteria then it would be deemed to be a special-to-type pylon racer and would be covered under Group 5.

- e. The entrant with the longest glide time counted in minutes and seconds will be the winner.
- f. The designated landing area is 8 metres square.
- g. There will be a 10% bonus for landing in the square.
- h. In the event of a tie there will be a fly-off timed by two marshals in minutes and seconds with a reduced engine run if necessary.

26. **Method of Scoring for Each Task.**

The winner of each task will be given 100 points. The other entrants will score on a percentage basis according to their performance. i.e. ,

Winner of longest glide 10 minutes - 100 points  
 Runner-up 8 minutes - 80 points

27. **Method of Scoring Overall Event.**

The points of each entrant for all tasks are added together. The entrant with the highest total is the overall winner.

**OPEN PYLON.**

28. This event is open to any type of R/C power model, the handicap system accounting for differing model performance. The following rules apply:

- a. Racing will take place over a standard FAI pylon course.
- b. **Composition.** The maximum number of models in each heat will be 4.
- c. **Qualification.** The composition of preliminary heats will be decided by a draw. Each model in each heat will be timed with the fastest 8 times from the first round heats going forward into the semi-finals. The fastest 4 times from the semi-finals will go forward into the final. The results list will comprise:

Position        1-4 times in the final  
                      5-8 times in the semi-final  
                      9 times in the first round heats.

- d. **Safety.** All pilots, flagmen and timekeepers are to wear protective helmets.
- e. **Calculation of Handicap.**

(1) Models will be divided into 5 basic groups:

7. **Cross Country.**

The aim of this event is to complete a cross-country course comprising a number of obstacles and turning points within a time specified by the CD. Any type of R/C glider may be used. The exact organisation of the even will be governed by the layout of the course itself determined by the terrain and weather conditions. However, the following general rules apply:

a. **Helpers.** Helpers are allowed to act as a guide to the pilot and if difficult obstacles are encountered the helper may take charge of the transmitter while the pilot negotiates the obstacle.

b. **Vehicles.** The use of a vehicle to follow the model around a course is forbidden.

c. **Attempts.** A flight is declared an attempt once the contestant has moved away from the launch point or box. Only ONE such attempt is allowed per competitor per round.

d. **Re-launches.** A re-launch may be made at any time during a round; the CD will nominate the appropriate point for re-launch. Timing will be continuous throughout re-launches unless the need for re-launch was caused by a mid-air collision as in sub-para e. below.

e. **Collisions.** If a contestant suffers a mid-air collision timing will cease at the moment the model crash lands. The model may be re-launched, repaired and re-launched or a new model launched from a point no further into the course than where the collision occurred. Timing will recommence at re-launch.

f. **Completion.** The course is deemed to have been completed when both the model and pilot have passed all the relevant turning point markers as briefed by the CD and the model is landed; timing ceases at this point.

g. **Scoring.** Scoring will be as follows:

1 point per obstacle crossed within the allotted time.  
 1 point per turning point rounded within the allotted time.  
 Landing bonus, as arranged.

The 9 highest scoring competitors will go forward into a fly -off, the organisation of which will be determined by the CD.

h. **Variations.** These rules may be varied at the discretion of the CD to suit local conditions.

8. **Pylon Racing.**

This event is open to any type of R/C glider. Racing will be over a course with pylons set approx. 100 metres apart. The following rules apply:

- a. The order of flying is to be decided by the CD.

b. Racing will start after allowing one minute from launch for models to gain height. A 'sail boat' start will be used with the last 10 secs being counted down by a time-keeper. Any model going through the gate early is to be turned back to re-enter.

c. Preliminary heats will be flown based on frequency availability and the number of contestants. Each heat will comprise a maximum of 4 models racing over 5 laps; each model will be timed. From the first heats, the heat winners and an equal number of fastest losers will go forward to the next rounds. The final will be flown over 10 laps.

d. A re-launch may be made at any time during a race provided that the model and contestant return to the previous turning point passed for the launch and that timing is continuous throughout this procedure.

e. These rules may be varied at the discretion of the CD to suit local conditions.

9. **Power Scale Soaring.**

All models must be based on a full sized powered aircraft (gliders are not permitted). the model will be judged on 3 separate occasions:

- a. Static.
- b. Flight 1.
- c. Flight 2.

10. **Static.**

The model will be judged static from a distance not less than 5 feet, taking into account complexity, accuracy of outline, colour and markings. Documentation is required in the form of a 3-view drawing and a colour picture/photograph of the subject aircraft showing same colour scheme and markings. Scoring will be carried out in accordance with the Power Clubman Scale score sheet.

11. **Flight 1.**

The model will fly 3 set manoeuvres and 2 optional manoeuvres:

- a. SET MANOEUVRES:
  - (1) 360 degrees turn.
  - (2) Figure eight circuit.
  - (3) Procedure turn.
- b. OPTIONAL MANOEUVRES, to be nominated before flight.

c. When the entrant is given the start signal he will start his engine with the help of his assistant and transport the model to the take-off position.

d. The model must take-off safely away from the gate into wind. The assistant must retire immediately from the gate, but be ready to retrieve the model if the engine cuts on take-off or in flight.

e. If the engine cuts out in flight, it may be restarted and the task continued, but the timing will not be stopped after the first take-off. All subsequent take-offs must be made from the gate area.

f. Timing will commence when the model is released.

g. If the strings are cut, only the clean passes up to that point will count. The pass cutting the string does not count.

24. **Pit Stop Rules.**

a. Take off into wind, fly for 30 seconds, cut engine and land on a designated area.

b. Start engine, take off into wind from the designated area, fly for 20 seconds, cut engine then land on designated area.

c. On board glow batteries are not allowed. Engines may be started by hand or by electric starter.

d. This event will be timed from the initial point of Take Off to the time when the wheels touch the ground on the last landing. The fastest time wins.

25. **Longest Glide Rules.**

The object of the task is to climb under power for a predetermined time and then, after the engine has been cut, to stay airborne as long as possible.

a. The throttle on the engine must be set up so that the engine can be stopped when the marshal gives the command.

b. The entrant will take-off from a given point and climb for 30 seconds (or less if weather conditions dictate).

c. The entrant will then be instructed by the marshal to stop the engine and glide.

d. Five seconds after the instruction to stop the engine is given the throttle should be opened fully and left open for five seconds to ensure that it has stopped (not for electric models).

21. **Loop, Roll and Touch and Go.**
- a. Take off into wind, complete one upwind loop followed by one downwind loop.
  - b. Perform two touch and goes on a designated area.
  - c. Perform one upwind roll followed by one downwind roll.
  - d. Land in the designated area.
  - e. To qualify as a touch and go both main wheels must first touch within the square (they may roll across the line after touching within the square) and then lift off.
  - f. Pilots may stand on their own selected spot.
  - g. The marked square is to be eight metres square.
  - h. Models must take off away from the square into wind.
  - j. All touch and go attempts must be made from a circular or figure 8 approach. Looping is not permitted.  
N.B. In the case of a tie, there will be a fly-off using a smaller square.

22. **Touch & Go.**
- The object of the task is to complete as many touch and goes in a designated area in 2 minutes, timed from the release of the model for take off.
- a. To qualify as a touch and go both main wheels must first touch within the square (they may roll across the line after touching within the square) and then lift off.
  - b. Models must take off away from the square into wind.
  - c. All touch and go attempts must be made from a circular or figure 8 approach. Looping is not permitted.

23. **Limbo Rules.**
- The object of this task is to complete as many clean passes through the limbo gate in 3 minutes, timed from the release of the model for take-off.
- a. A clean pass will be scored if the model passes under and in between the strings carrying the streamers. The ground must not be contacted and the strings must remain unbroken.
  - b. Whilst flying the entrant must remain within the area marked by the tapes on either side of the gate for the full two minutes. If the entrant moves outside the marked area he will be disqualified.

## **SECTION 4**

### **FREE FLIGHT**

#### **CLASSES**

1. The following classes and rules apply :
  - a. **BMFA Rules.**  
  
Open Rubber  
Open Glider  
Open Power.
  - b. **RAFMAA Rules.**  
  
Scramble.

#### **GENERAL RULES**

2. All Open events are flown to 5 rounds of 3-min maxes with no model restrictions. The winner of the event is the entrant scoring the highest aggregate flight time. The number of rounds and maxes may be varied by the CD to reflect conditions and entries during the events. In the event of a draw at the end of the declared number of rounds, a fly off with incremental maxes will be flown until a winner is declared.
3. Open power models are restricted to a 7-second engine run.
4. Open gliders are limited to a 50m towline.
5. **Free Flight Scramble.**  
  
This event is open to any model defined as "Free Flight" by BMFA rules. It is a fun event in which the aim is to log as much flying time as possible in a 30 minute period, but the model must be recovered to the starting line for each re-launch. The following rules apply:
  - a. The contest will take place within a specified 30-minute period.
  - b. Each competitor is allowed only one assistant.
  - c. Only the competitor is allowed to retrieve his model after each flight and retrieval must be on foot. To safeguard to health of 50-year-old members, an assistant I allowed to retrieve models from a long distance.
  - d. The score shall be the total duration of all flights made within the 30-minute period but only flights in excess of 20 sec's are to count.
  - e. The maximum score for each flight is 2 minutes.

f. All time-keeping will cease immediately upon the ending of the 30-minute period, notwithstanding that a model may still be airborne.

g. Prior to the start models may be fuelled, charged or otherwise prepared for flight. Subsequent preparation for flight may only take place at the start line. For electric models spare batteries may be charging at the start line during model flight and recovery.

h. A competitor must have made a 'reasonable' effort to achieve a qualifying time. Not make one flight then retire. This is at the Contest Director's discretion.

## **MULTI TASK 'FUN FLY' COMPETITION**

### **17. Model Configuration.**

Any fixed wing model aircraft up to 5 kg maximum weight. The model must be capable of taking-off and landing on its own undercarriage.

### **18. Event Details.**

The event will involve five 'tasks' noted below:

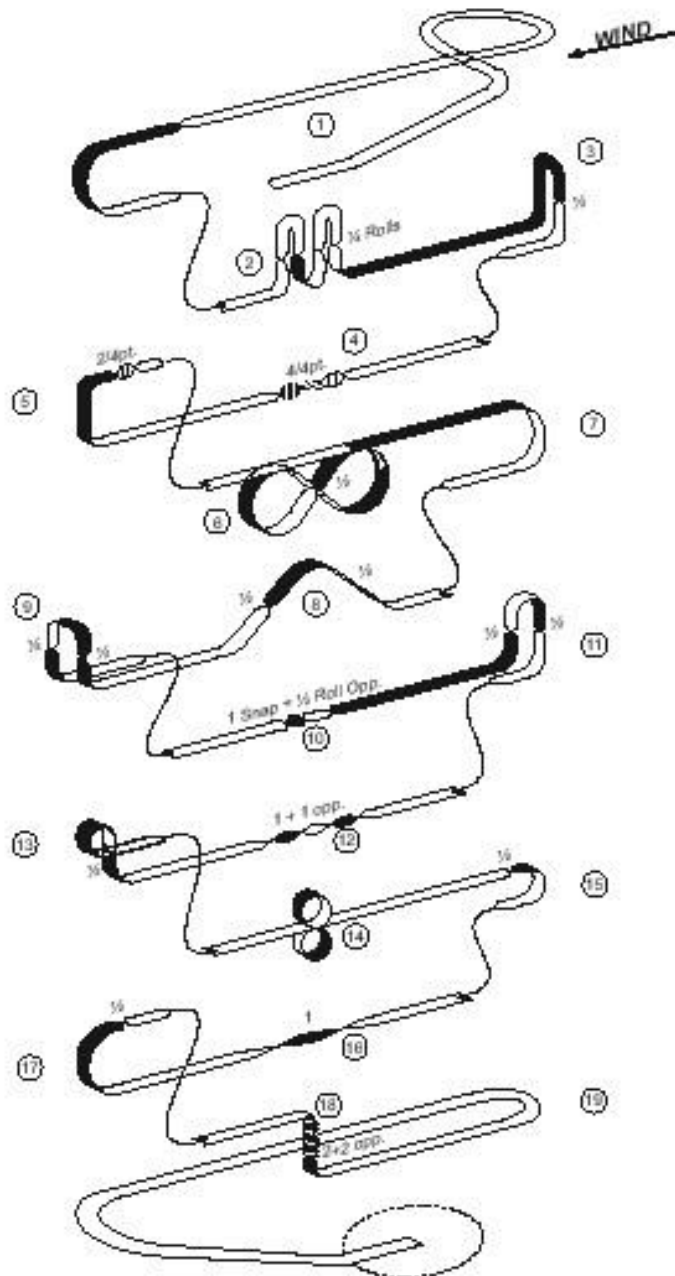
- a. Loop, roll and Touch-and-Go
- b. Touch and go,
- c. Limbo
- d. Pit Stop
- e. Longest Glide

19. Scores from tasks all will count towards the overall score. The tasks may be performed in any order as requested by the CD on the day. Although participants may be placed, in the individual tasks, placings, will only be given in the overall event if all five tasks are completed. If weather conditions prevent the erection of a suitably frangible limbo gate the CD may exclude the task from the event.

### **20. Pilot's Rules for All Tasks.**

- a. All models must R.O.G. in a safe manner into wind. Whilst airborne, the pilot must remain between the model and spectators and other entrants at all times (i.e. spectators must be behind the pilot and the model must be in front of the pilot).
- b. The same model must be used for all tasks.
- c. Pilots, assistants and marshals for all tasks except the 'Longest Glide' must wear protective headgear.
- d. Each competitor will be allowed to re-fly a single task of his choice (not all tasks!) at a time agreed with the CD. On giving notice to exercise this option the individuals score already attained for the task will be discarded and only the score from the re-fly will count towards the overall position.
- e. Entrants will be expected to attempt all events. They may withdraw at any time but will only gain a station point if, in the opinion of the Contest Director, their model becomes unfit to fly after they have completed at least one event.

## ADVANCED AEROBATIC SCHEDULE OF MANOEUVRE



## SECTION 5

### RADIO CONTROL POWER

#### CLASSES

1. The following classes and rules apply except as modified below:
  - a. BMFA/GBRCAA Rules.  
Clubman Scale.  
Standard Aerobatics.
  - b. RAFMAA Rules.  
Sportsman Aerobatics.  
Advanced Aerobatics.  
Multi Task 'Fun Fly'.  
Open Pylon.

#### GENERAL RULES

2. Model specifications are as defined in BMFA Contest Rules Sections 5 and 6 except as modified below.
3. Engines are to be started in the designated areas.
4. The number of rounds to be flown in any competition will be determined by the CD having taken into account the weather conditions and number of contestants. In the event of weather deterioration during the competition the decision of the CD and judges as to placings will be final.
5. The 'builder of the model' and 'multiple entry' rules are waived for the Fun Fly, Open Pylon and Aerobatics events.

#### BMFA-RULE VARIATIONS

6. Clubman Scale  
Subject to the approval of the CD, a competitor may be allowed to enter more than one model but only the model achieving the highest marks will count in the final placing.

## RAFMAA RULES

### AEROBATICS CLASSES

#### 7. Automatic Upgrades

a. Sportsman Aeros v Standard Aeros. Sportsman Aeros are run in conjunction with Standard and Advanced Aeros. Competitors scoring 110 or more will automatically progress to Standard Aeros and be barred from competing in Sportsman Aeros at subsequent Championships.

b. Standard Aeros v Advanced Aeros. Standard Aeros are to be run in conjunction with Sportsman and Advanced Aeros. Competitors scoring 210 or more will automatically progress to the Advanced Aeros and be barred from competing in Standard and Sportsman Aeros at subsequent Championships.

#### 8. Attempts

Each competitor will be allowed 2 attempts to complete each flight; however, only 1 re-flight may be called throughout the event, not 2 attempts per round. An 'attempt may be called at any point prior to completing manoeuvre 3. A second attempt will not be allowed when the first attempt was curtailed due to any lack of airmanship on the part of the competitor.

#### 9. Number of Rounds

The number of rounds will be at the discretion of the CD. Where more than 1 round is flown each competitor will drop the lowest round score and the result will be decided on the total of the remaining scores.

#### 10. Scoring

Each manoeuvre will be scored out of 10 points and then multiplied by the respective K factor.

#### 11. Model specifications

Models for Standard and Advanced Aeros must comply with the specification laid out in GBRCAA rules for Standard Aeros, which are normally derived from current FAI F3A rules.

#### 12. Sportsman Aerobatics

This event is open to all competitors who ARE NOT standard, advanced or master class pilots, past or present; the CD's decision on eligibility is final. The rules are very straight forward as follows:

a. Engine. No restriction.

b. Model. Maximum wingspan and length 2 metres. Dry weight not to exceed 5kg.

c. Manoeuvre positioning. The manoeuvres are to be flown in front of the judges position on successive passes, odd numbers into wind, even

#### 13. Figure 9, ½ Roll Up

Pull to a vertical up-line, perform a half roll then pull to perform three fourths of an inside loop.

#### 14. Vertical Eight, Mid Entry, Top First

Pull to an inside loop on top followed by an outside loop centred under the inside loop. Exit upright.

#### 15. Split S

Perform a half roll followed immediately by a half inside loop. There is no hesitation between the half roll and the half inside loop.

#### 16. Slow Roll

From level flight perform one slow roll to recover to level flight.

#### 17. Immelman Turn

Model performs half a loop, immediately followed by a half roll to exit upright at a higher altitude than entry. There is no hesitation between the half loop and the roll.

#### 18. Two + Two Spins Opposite

From level flight perform a two-turn spin then immediately perform a two-turn spin in the opposite direction. Hold a near vertical down-line then pull to recover to level flight.

#### 19. Landing Sequence

At reduced power execute a 180-degree level or descending turn to a downwind heading. Fly a downwind leg, then turn 180 degrees into wind. Fly a descending approach to the runway touching down in the landing zone. The landing sequence is complete when the model has either rolled 10 metres or comes to rest.

Notes:

- i. Model does not follow landing sequence, zero points.
- ii. If any landing gear retracts on landing, zero points.
- iii. If the model lands outside the landing zone, zero points. The landing zone is designated by a circle of 50 metres radius or lines across a standard runway spaced 100 metres apart where the runway is at least 10 metres wide.
- iv. The landing sequence is marked out of 10 points with a K Factor of 1.

through 180 degrees, dives vertically and performs a ¼ roll to exit inverted.

3. **Stall Turn, ½ Roll Down**

Model pushes to vertical flight, stall turns through 180 degrees, dives vertically and executes ½ roll and pulls into level flight.

4. **Four Point Roll**

Model performs one 360-degree roll hesitating at each 90-degree point when wings are parallel or vertical to the horizon.

5. **Half Square Loop, 2/4 pt Roll on Exit**

Model pulls to a vertical upline and completes a half square inside loop, then immediately performs two points of a four-point roll.

6. **Cuban Eight from Top, ½ Roll in exit line, Exit Inverted**

Model pushes down to execute five-eighths of an outside loop to a 45 degree inverted up-line then pulls and executes three fourths of an inside loop. On the second 45-degree up-line perform a half roll and pull to recover inverted.

7. **Half Loop**

From inverted pull to complete a half inside loop.

8. **Cobra Roll with ½ Roll Up & Down**

Model pulls to a 45-degree up-line and performs a ½ roll, pulls through 90 degrees, dives at 45 degrees, performs a ½ roll and pulls recover level.

9. **Top Hat, ¼ Roll Up & Down**

Model pulls up into vertical flight, executes ¼ roll, pulls into level inverted flight, pulls to vertical, executes another ¼ roll and pulls into level flight.

10. **1 Positive Snap, ½ Roll Opposite**

On a horizontal line perform 1 positive snap roll followed by a half roll in the opposite direction, exit inverted. There should only be a brief hesitation between the snap roll and the half roll.

11. **Push Push Pull Humpty Bump, ½ Roll Up & Down**

Push to a vertical up-line and perform a half roll, push into half outside loop, perform a half roll in the down-line then pull to recover to level flight.

12. **One + One Rebound Roll**

Perform a 360-degree roll followed by another 360-degree roll in the opposite direction. There is no hesitation between the rolls.

## **SPORTSMAN SCHEDULE MANOEUVRE DESCRIPTIONS**

13. **Schedule**

a. All manoeuvres will start and finish in straight and level flight. Manoeuvres will start and finish on the same heading. Unless noted, entry and exit will be at the same altitude.

b. All manoeuvres which have more than one loop or part of loops will have the loops or parts of loops of the same diameter and in the case of consecutive loops, in the same place. Similarly all manoeuvres which have more than one roll will have the same roll rate. All consecutive rolls will be at the same altitude and heading.

c. All manoeuvres with rolls or part rolls will have lines of equal length before and after the rolls.

d. Any violation of the above will be reason for downgrading, in addition to the downgrades listed in the manoeuvre descriptions. Note that these lists are not all inclusive.

e. The schedule is as depicted at page 18 and is as follows:

1. **2 INSIDE LOOPS (K factor 2).**

Model pulls up and executes 2 consecutive inside loops.

**Downgrades:**

- i. Loops not round.
- ii. Loops not superimposed.
- iii. Wings not level during loops.
- iv. Changes in heading during loops.

2. **STRAIGHT INVERTED FLIGHT (K factor 2).**

Model ½ rolls to inverted and flies straight and level inverted for a minimum of 4 seconds, then ½ rolls back to level flight. Half rolls may be in either direction.

**Downgrades:**

- i. Half rolls not level.
- ii. Inverted flight not straight and level.
- iii. Changes in heading during rolls and inverted flight.
- iv. Half rolls not 180 deg.

3. **SQUARE INSIDE LOOP (K factor 2).**

Model pulls up and performs an inside square loop.

**Downgrades:**

- i. Loop not square.
- ii. Quarter loops different radii.
- iii. Wings not level during quarter loops.
- iv. Changes of heading during quarter loops.
- v. Sides of square not equal length.

4. **OUTSIDE LOOP (K factor 2).**

Model pushes over and executes an outside loop.

**Downgrades:**

- i. Loops not round.
- ii. Loops not superimposed.
- iii. Wings not level during loops.
- iv. Changes in heading during loops.

5. **CUBAN EIGHT (K factor 2).**

Model pulls up and executes 5/8 of an inside loop, when at 45 deg inverted, model does a 1/2 roll followed by 3/4 of an inside loop, when at 45 deg inverted model does a second 1/2 roll and recovers to level flight.

**Downgrades:**

- i. Loops not round and same size.
- ii. Rolls not at 45 deg.
- iii. Rolls do not crossover at the same point.
- iv. Rolls not exactly 180 deg.

6. **SLOW ROLL (K factor 3).**

Model rolls slowly through one complete revolution, left or right.

**Downgrades:**

- i. Changes in heading.
- ii. Changes in altitude.
- iii. Roll rate not constant.
- iv. Roll not exactly 360 deg.

16. **Advanced Aeros**

This event is open to all competitors who have either achieved the required upgrade from Standard Aeros or are Master Class pilots, past or present; the CD's decision on eligibility is final.

**ADVANCED SCHEDULE MANOEUVRE DESCRIPTIONS**

17. **Schedule**

a. All manoeuvres will start and finish in straight and level flight. Centre manoeuvres will start and finish on the same heading while turn-around manoeuvres will finish on heading 180 deg to entry. Unless noted, entry and exit will be at the same altitude.

b. All manoeuvres which have more than one loop or part of loops will have the loops or parts of loops of the same diameter and in the case of consecutive loops, in the same place. Similarly all manoeuvres which have more than one roll will have the same roll rate. All consecutive rolls will be at the same altitude and heading.

c. All manoeuvres with rolls, part rolls or snap rolls will have lines of equal length before and after the rolls unless noted otherwise (as in immelmann and avalanche).

d. Any violation of the above will be reason for downgrading, in addition to the downgrades listed in the manoeuvre descriptions. Note that these lists are not all inclusive.

e. The schedule is as depicted at page 29 and is as follows:

1. **Take-Off Sequence**

The model is placed on the runway, takes off and turns 90 degrees toward the line defined by the upwind and downwind markers. When approximately over this line the model turns 270 degrees for a downwind trim pass. When approximately even with the downwind marker the model initiates a 180-degree turn, reversal or other turn-around manoeuvre of the pilot's choice.

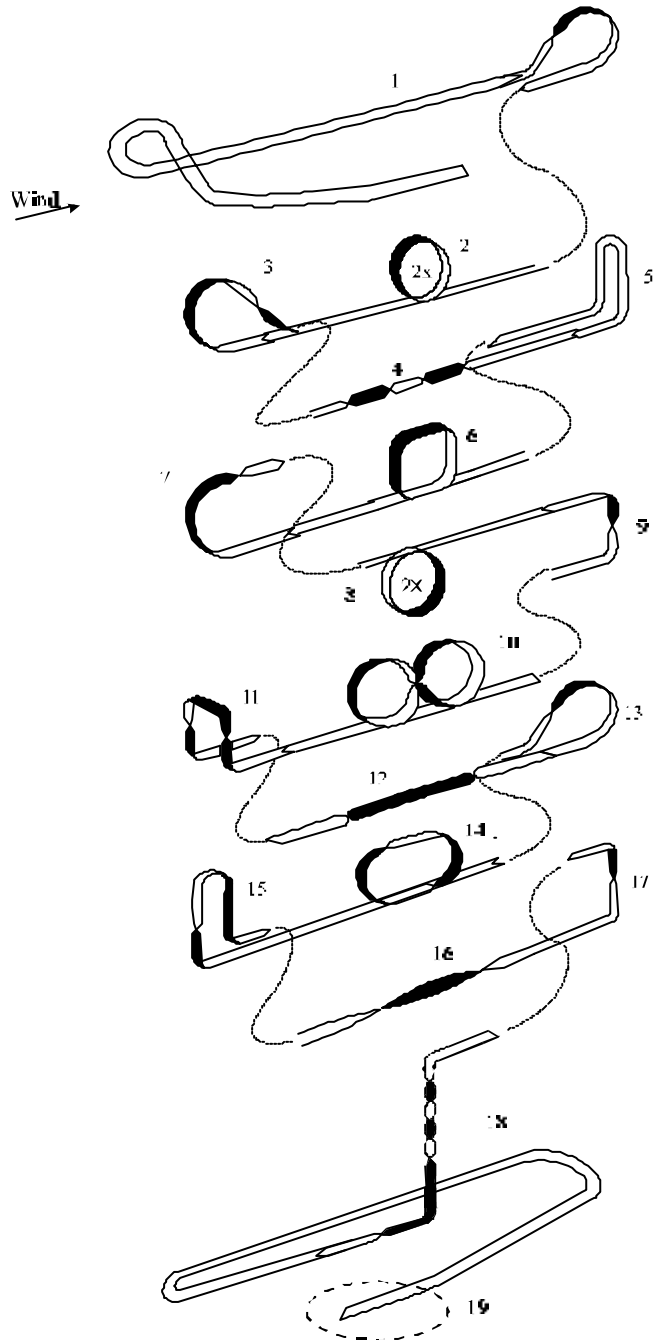
Notes:

- i. Take off sequence not followed, zero points.
- ii. Model passes behind judge's line (zero line), zero points.
- iii. The take off sequence is marked out of 10 points with a K Factor of 1.

2. **Figure M, 1/4 Rolls Up & Down, Exit Inverted**

Model pulls to vertical flight, performs 1/4 roll, stall turns through 180 degrees, dives vertically and performs a 1/4 roll, PUSHES again to vertical flight ( Note: The centre half loop is performed INVERTED ), performs a 1/4 roll, stall turns

**STANDARD AEROBATICS SCHEDULE OF MANOEUVRES**

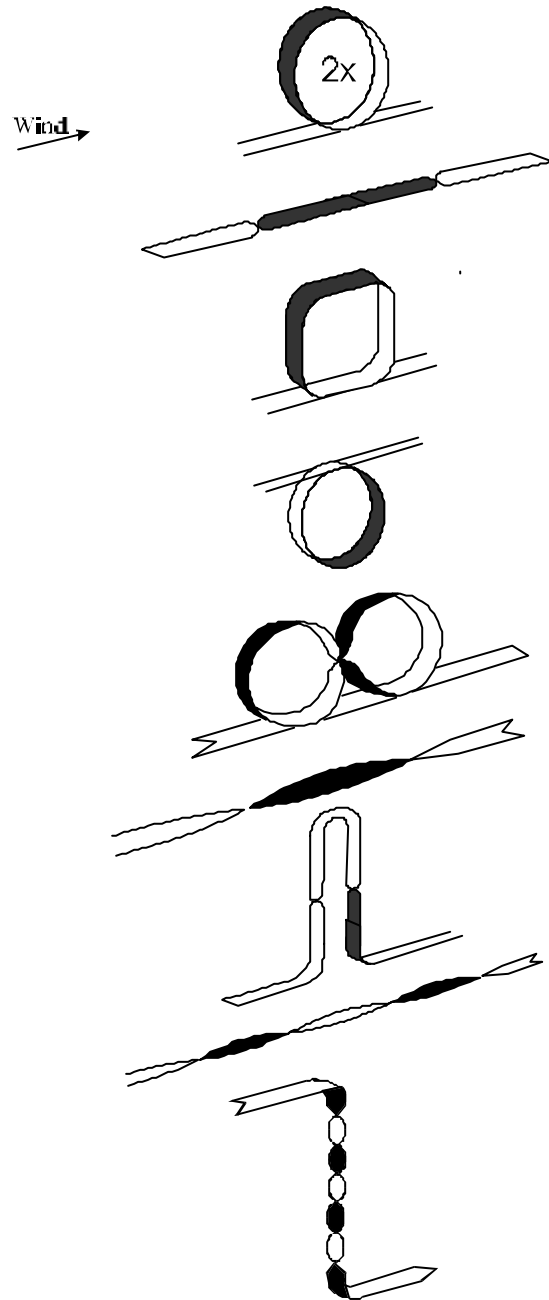


7. **STALL TURN ¼ ROLLS (K factor 3).**

Model pulls up into vertical flight path, performs a ¼ roll, executes a 180 deg stall turn (left or right), performs a second ¼ roll then pulls to recover in level flight.

**Downgrades:**

- i. Flight path not vertical at start and finish of rolls and stall turn.
- ii. Stall turn not exactly 180 deg.
- iii. ¼ rolls not exactly 90 deg.



17.

**½ SQUARE LOOP ½ ROLL UP (K factor 2).**

Model pulls into vertical flight path executes a ½ roll then pushes to recover in level flight at a higher altitude than entry.

**Downgrades:**

- i. Wings not level during ¼ loops.
- ii. Flight path not vertical at start and finish of ½ roll.
- iii. Roll not exactly 180 deg.

18.

**2 ½ TURN SPIN (K factor 3).**

Model establishes a heading and with reduced power the model is held in a nose high attitude until it stalls and commences to spin. The model autorotates through 2 ½ turns, pauses in a nose down attitude then pushes to recover on the same heading at a lower altitude, the model rolls through 180 deg to exit upright.

**Down grades:**

- i. Entry not level.
- ii. Snap roll at entry scores zero points.
- iii. Wings not level during entry and exit.
- iv. Spiral dive more than ½ turn scores zero.
- v. Less than 2 turns or more than 3 turns scores zero.
- vi. Roll not exactly 180 deg.

19.

**LANDING SEQUENCE (K Factor 1)**

At reduced power execute a 180 deg level or descending turn to a downwind heading. Fly a downwind leg, then turn 180 deg turn into the wind. Fly a descending approach to the runway touching down in the landing zone. The landing sequence is complete when the model has either rolled 10 meters or comes to rest.

**Downgrades:**

- i. Model does not follow the landing sequence, zero points.
- ii. If any landing gear leg retracts on landing, zero points.
- iii. If the model lands outside the landing zone, zero points. The landing zone is designated by a circle of 50 metres radius or lines across a standard runway spaced 100 meters apart where the runway is at least 10 meters wide.

**Downgrades:**

- i. Half rolls not level.
- ii. Inverted flight not straight and level.
- iii. Changes in heading during rolls and inverted flight.

13. **½ CUBAN EIGHT (K factor 1).**

Model pulls up and completes 5/8 of an inside loop, when at 45 deg inverted model performs a ½ roll then pulls up to recover in level flight.

**Downgrades:**

- i. Loop not round.
- ii. Flight path not at 45 deg before and after ½ roll.
- iii. ½ roll not exactly 180 deg.

14. **DOUBLE IMMELMAN (K Factor 3).**

Model pulls up and completes ½ of an inside loop and then ½ rolls to level flight. Model then pushes into ½ of an outside loop and then ½ rolls to level flight.

**Downgrades:**

- i. Loop not round.
- ii. 1/2 rolls not 180 deg.

15. **HUMPTY BUMP (K Factor 2).**

Model pulls up into a vertical flight path, executes a ½ roll ( or optionally a ¼ roll up), pushes or pulls through a ½ loop to a vertical flight path, pauses (or executes the second ¼ roll) then recovers in level flight.

**Downgrades:**

- i. Flight path not vertical at beginning and end of half roll(or quarter rolls).
- ii. quarter rolls).
- iii. ½ roll not exactly 180deg (or 90 deg for quarter rolls).
- iv. Half loop not round.

16. **SLOW ROLL (K factor 3).**

Model rolls slowly through one complete revolution, left or right.

**Downgrades:**

- i. Changes in heading.
- ii. Changes in altitude.
- iii. Roll rate not constant.
- iv. Roll not exactly 360 deg.

14. **Standard Aeros**

This event is open to all competitors who achieved the required upgrade from Sportsman Aeros and ARE NOT advanced or master class pilots past or present; the CD's decision on eligibility is final.

**STANDARD SCHEDULE MANOEUVRE DESCRIPTIONS**

15. **Schedule**

a. All manoeuvres will start and finish in straight and level flight. Centre manoeuvres will start and finish on the same heading while turn-around manoeuvres will finish on heading 180 deg to entry. Unless noted, entry and exit will be at the same altitude.

b. All manoeuvres, which have more than one loop or part of loops, will have the loops or parts of loops of the same diameter and in the case of consecutive loops, in the same place. Similarly all manoeuvres, which have, more than one roll will have the same roll rate. All consecutive rolls will be at the same altitude and heading.

c. All manoeuvres with rolls, part rolls or snap rolls will have lines of equal length before and after the rolls unless noted otherwise (as in immelmann and avalanche).

d. Any violation of the above will be reason for downgrading, in addition to the downgrades listed in the manoeuvre descriptions. Note that these lists are not all inclusive.

e. The schedule is as depicted at page 23 and is as follows:

1. **TAKE OFF SEQUENCE (K factor 1).**

**The model is placed on the runway, takes off, then turns through 90 deg to fly toward the manoeuvring line. When approximately over this line the model turns through 270 deg for a down wind trim pass. At the down wind end of the line the model initiates a 180 deg turn, reversal or other turn-around manoeuvre of the pilots choice.**

**Downgrades:**

- i. Takeoff procedure not followed, zero points.
- ii. Model passes behind the judges line, zero points.
- iii. Only two scores, a zero or a 10 may be awarded for the takeoff procedure.

2.

**2 INSIDE LOOPS (K factor 2).**

Model pulls and executes 2 consecutive inside loops. All loops should be round and superimposed.

**Downgrades:**

- i. Loops not round.
- ii. Loops not superimposed.
- iii. Wings not level during loops.
- iv. Changes in heading during loops

3. **½ REV CUBAN EIGHT (K factor 1).**

Model pulls up into a 45 deg climb, ½ rolls to inverted, then executes 5/8 of an inside loop back to level flight.

**Downgrades:**

- i. Model not at 45 deg before and after ½ roll.
- ii. Changes in heading in roll.
- iii. Loop not round.

4. **2 CONSECUTIVE ROLLS (K factor 2).**

Model rolls through 720 deg.

**Downgrades:**

- i. Roll not exactly 720 deg.
- ii. Model pauses during roll.
- iii. Roll rate not constant.
- iv. Changes in heading in roll.

5. **STALL TURN (K Factor 1).**

Model pulls up into vertical flight path, executes a 180 deg stall turn (left or right), then pulls to recover in level flight.

**Downgrades:**

- i. Flight path not vertical at start and finish of rolls and stall turn.
- ii. Stall turn not exactly 180 deg.
- iii. Quarter loops different radii.

6. **SQUARE INSIDE LOOP (K factor 2).**

Model pulls up and performs an inside square loop.

**Downgrades:**

- i. Loop not square.
- ii. Quarter loops different radii.
- iii. Wings not level during quarter loops.
- iv. Changes of heading during quarter loops.
- v. Sides of square not equal length.

7. **IMMELMANN (K factor 1).**

Model pulls up and completes a ½ inside loop then immediately ½ rolls to recover in level flight at a higher altitude than entry.

**Downgrades:**

- i. Changes in heading during ½ loop or ½ roll.
- ii. ½ roll not immediately after ½ loop.
- iii. ½ loop not of constant radius.

8. **2 OUTSIDE LOOPS (K factor 2).**

Model pushes over and executes 2 consecutive outside loops. All loops should be round and superimposed.

**Downgrades:**

- i. Loops not round.
- ii. Loops not superimposed.
- iii. Wings not level during loops.
- iv. Changes in heading during loops.

9. **½ SQUARE LOOP WITH ½ ROLL DOWN (K factor 2).**

Model pushes to vertical dive, executes ½ roll then pulls to level flight at a lower altitude than at entry.

**Downgrades:**

- i. Flight path not vertical at start and finish of roll.
- ii. ½ roll not exactly 180 deg.

10. **CUBAN EIGHT (K factor 2).**

Model pulls up and executes 5/8 of an inside loop, when at 45 deg inverted, model does a ½ roll followed by ¾ of an inside loop, when at 45 deg inverted model does a second ½ roll and recovers to level flight.

**Downgrades:**

- i. Loops not round and same size.
- ii. Rolls not at 45 deg.
- iii. Rolls do not crossover at the same point.
- iv. Rolls not exactly 180 deg.

11. **TOP HAT WITH 1/4 ROLLS (K Factor 2).**

Model pulls to vertical, model does a ¼ roll, model pulls to inverted flight. Model then pulls to a vertical down-line and does a second ¼ roll and recovers to level flight. Roll direction and length of inverted flight at pilots discretion for wind correction.

**Downgrades:**

- i. Flight path not vertical before and after rolls.
- ii. Quarter loops different radii.
- iii. Changes of heading during inverted flight.

12. **STRAIGHT INVERTED FLIGHT (K factor 2).**

Model ½ rolls to inverted and flies straight and level inverted for a minimum of 4 seconds, then ½ rolls back to level flight. Half rolls may be either direction.