

5.1 RC AEROBATICS

5.1.1 GENERAL

5.1.1.1 Applicability

All BMFA Fixed Wing RC Aerobatic competitions, except Scale Aerobatics as per Section 5.2, are run on behalf of the BMFA by UKF3A (the working title of the Great Britain RC Aerobatic Association).

5.1.1.2 Types of Competitions

5.1.1.2.1

The following competitions are organised each year:

- BMFA Centralised F3A Competitions
- BMFA British National F3A Championships
- BMFA F3A Team Selection Competition(s)
- BMFA F3P Team Selection Competition(s)

5.1.1.2.2

UKF3A also runs National League competitions and the UKF3A Championships which are run to a similar format as the BMFA Centralised Competitions. Detailed information about these competitions can be obtained from the UKF3A at ukf3a.com

5.1.1.3 Classes and Manoeuvre Schedules

5.1.1.3.1

The following Classes are flown at BMFA Competitions:

- Clubman – Schedule C
- Intermediate – Schedule I
- FAI Advanced Schedule - FAI Schedule A-27
- FAI Preliminary Schedule – FAI Schedule P-27
- FAI Preliminary and Finals Schedules – FAI Schedules P-27 and F-27
- FAI Preliminary, Finals and Unknown Schedules – FAI Schedules P-27, F-27 and at the discretion of the UKF3A committee, approved computer-generated Unknown Schedules (BMFA Team Selection Competition(s) only)
- FAI AP & AF Schedules (F3P Competitions only)

5.1.1.3.2

Schedules A-27, P-27, F-27, the Unknown Manoeuvre list and AP/AF Schedules can be found in the FAI Sporting Code Section 4 Volume F3 – Radio Control Aerobatics.

5.1.1.4 Pilot Competence

5.1.1.4.1

Entrants to BMFA Centralised Competitions, the BMFA National Championships and BMFA Team Selection Competitions shall meet the competency requirements mandated by the BMFA for that competition.

5.1.1.4.2

Entrants to UKF3 Competitions shall meet the following competency requirements:

- All Classes – BMFA A Certificate or SAA Bronze Award

5.1.1.5 Disputes

5.1.1.5.1

Any disputes at BMFA competitions shall be resolved using the guidelines set out in the Protests & Appeals section of the BMFA Contest Rules Section 5 RC Power.

5.1.2 COMPETITION FORMATS

5.1.2.1 BMFA Centralised F3A Competitions

5.1.2.1.1

Under BMFA Specialist Body requirements, UKF3A is required to organise a minimum of three Centralised Competitions each year, open to any entrant who meets the BMFA entry requirements. These competitions are advertised on the BMFA web site.

5.1.2.1.2

The format and rounds to count for BMFA Centralised Competitions shall be as follows:

- 4 Rounds – best 3 from 4
- 3 Rounds – best 2 from 3
- 2 Rounds – best 1 from 2
- 1 Round - the 1 round will count

5.1.2.1.3

All round scores will be normalised in accordance with the FAI Sporting Code Section 4 Volume F3 – Radio Control Aerobatics.

5.1.2.2 BMFA National Championships

5.1.2.2.1

The competition to decide the National Champion in each class shall use Preliminary and Finals flights. The format and rounds to count shall be as follows:

- 6 Rounds – 4 Preliminary Rounds; 2 Finals Rounds (best 3 from 4 Preliminaries, + best Finals)
- 5 Rounds – 4 Preliminary Rounds; 1 Final Round (best 3 from 4 Preliminaries, + Final)
- 4 Rounds – best 3 from 4
- 3 Rounds – best 2 from 3
- 2 Rounds – best 1 from 2
- 1 Round – the 1 round will count

5.1.2.2.2

Clubman, Intermediate, FAI Advanced Schedule and FAI Preliminary Schedules competitors will fly the schedule for their respective classes in all rounds.

5.1.2.2.3

FAI Preliminary and Finals Schedules competitors will fly Schedule P-27 in the Preliminary rounds and Schedule F-27 in the Finals rounds.

5.1.2.2.4

Only FAI P&F scores will be normalised in accordance with the FAI Sporting Code Section 4 Volume F3 – Radio Control Aerobatics. Where Finals are flown, the total scores from the Preliminary rounds will be re-normalised to 1000 points, before adding the Finals score to give a total score for the competition result.

5.1.2.3 F3A Team Trials

5.1.2.3.1

The team for the following year's World or European Championship and the Triple Crown Competition shall be selected based on the results of Team Trials organised by UKF3A.

5.1.2.3.2

The Team Trial Competition shall be held on one weekend days between 1st May and 15th October each year, except any dates within 10 days of a World or European Championship.

5.1.2.3.3

The Team Trial Competition format will be determined by the UKF3A Committee. At least 50% of the qualifying score will be from flights of the FAI semi-finals and finals schedule. If the competition format includes unknown Schedules, the format will be published at least eight weeks before the start of the competition. If the competition format does not include Unknown Schedules the format will be published at least four weeks before the start of the competition

5.1.2.3.4

The P and F Schedules shall be the current FAI F3A Preliminary and Finals Schedules in the year of the Team Trial.

5.1.2.3.5

Flight scores shall be normalised in accordance with the FAI Sporting Code Section 4 Volume F3 – Radio Control Aerobatics.

5.1.2.3.6

The final ranking shall be determined in accordance with the following table:

Number of complete rounds	Flights to count
6	Highest 4 scores
5	Highest 3 scores
4	Highest 3 scores

Number of complete rounds	Flights to count
3	Highest 2 scores
2	Highest 1 score

5.1.2.3.7

In the event of a tie in scores, the next highest score for the affected competitors will be used to determine the ranking.

5.1.2.3.8

If two rounds cannot be completed, a further one day trial will be arranged at the earliest convenient date to complete as much of the planned competition format as practicable.

5.1.2.3.9

If the Team Trial (including any rearranged competitions) cannot be completed by 15th October in any year, the UKF3A Committee shall determine the method of selection of team members and their decision (which need only be by majority vote) shall be final and binding. In making any such decision, the UKF3A Committee shall consider the required period of notice for nomination of team members for ratification by the BMFA.

5.1.2.3.10

The Contest Director for the Team Trials will be appointed by the Specialist Body.

5.1.2.3.11

The F3A & F3P Team Trials will determine the ranking of pilots to represent the United Kingdom at European and World Championships. At the end of their respective qualifying competitions, the top three pilots from the Team Trials will be formally offered a place on the British Team, and if accepted will be recommended to the BMFA as the UK team. If one or more of the top three pilots declines their team place, then the next highest placed pilot in the Team Trial will be offered a place until all places have been filled, or there are no more pilots from the Team Trial willing to be a member of the team. First and second reserve Team Members will also be selected from the next two highest place pilots in the Team Trial that are willing to accept a reserve place in the UK Team.

5.1.2.3.12

There may be a fourth team member if that person is a junior according to the FAI rules and meets the BMFA rules for junior qualification below. There may also be a fifth team member provided that person is a female.

Rules for Junior Team member qualification:

- Inclusion as a Junior team member is subject to the BMFA guidelines for 'young and vulnerable persons' and the Junior team member must be accompanied to the event by a parent, guardian or other responsible person.
- The Junior pilot must compete in the BMFA Team Selection competition.
- To qualify for BMFA Team Selection, a junior must have achieved on average at least 85% of the event winner's score to be eligible for qualification as a Junior Team Member.

5.1.2.4 F3P Competitions and Team Selection Process

F3P competitions, including National Championships and Team Selection will comprise as many rounds of the AP schedule as time allows. The AF schedule may also be included at the discretion of the Contest Director.

5.1.3 MANOEUVRE SCHEDULES

5.1.3.1 Clubman Schedule

C-01 Racetrack Take-Off Sequence (K = 2)

The model is placed on the take-off area, parallel to the flight line and released. The model rolls along the take-off area until flying speed is achieved, then establishes straight climbing flight parallel to the flight line. The model then turns through 180 degrees in a continuous turn and flies back over the manoeuvring area centre line. Take-off is completed once the centre line has been crossed and the model then performs a 180 degree turnaround of the pilot's choice, which is not scored.

Notes: Box limitations do not apply to this manoeuvre. On rough surfaces or when there is a crosswind, it is acceptable for a helper to restrain the model on the ground until take-off power is applied.

Judging notes

- Model does not track straight on take-off: 1-2 points. (Disregard the effect of the take-off surface e.g. ruts and potholes on grass sites)
- Wings not level after take-off: 1 point per 15 degrees
- Rate of climb too steep: 1-2 points above 30 degrees

- Model goes behind judge's line after take-off: zero points.
- Model retouches runway after lift-off: 1 point
- Any part of the aircraft structure becomes detached on take-off: zero points for the whole flight.

C-02 Inside Loop (K = 2)

From upright on the baseline at the centre line, pull through one inside loop to exit upright at baseline height.

Judging notes

- Loop should be of constant radius.
- Entry and exit should be same height and start / finish on centre line.
- Loop should be on the centred on centre line.

C-03 Immelmann Turn (K= 2)

From upright on the baseline fly a horizontal line then pull through 1/2 of an inside loop then immediately perform a half roll to upright.

Judging notes

- Constant radius through half loop.
- Changes in heading during half loop or roll
- Half roll not immediately after loop
- Must remain in the box to avoid deductions.

C-04 One Outside Loop (K=2)

From upright and on the centre line carry out one outside loop.

Judging Criteria

- Loop not round
- Wings not level during loop
- Changes in heading during loop
- Loop should be on the centre line.

C-05 Split S (K = 2)

From upright, the model performs a half roll and immediately performs a half loop to exit upright on the baseline.

Judging notes

- $\frac{1}{2}$ roll not exactly 180° .
- Loop not constant radius.
- Changes in heading during half loop or roll.
- Must remain in the box to avoid deductions.

C-06 Cuban Eight with Half Rolls (K = 3)

From upright on the baseline fly past centre and perform $\frac{5}{8}$ of an inside loop into a 45° down line, half roll in the centre of this line. Pull through a $\frac{3}{4}$ loop into a 45° down line, half roll in the centre of this line. Perform a $\frac{1}{8}$ loop to exit upright on the baseline.

Judging notes

- Loops not round
- Dives not at 45° - track not angle of aircraft.
- Half rolls not in centre of line
- Changes in heading.
- Loops not equal radius.
- Cross over on 45lines must be over centre line.

C-07 Stall Turn (K = 2)

From upright on the baseline pull through a $\frac{1}{4}$ loop into a vertical up line, followed by a stall turn into a vertical down line. Pull through a $\frac{1}{4}$ loop to exit upright.

Judging notes

- If the stall turn radius is between half and 1 wingspan then downgrade 1 point
- If the stall turn radius is between 1 wingspan and 1.5 wingspans then downgrade 2-3 points
- If the stall turn radius is between 1.5 wingspans and 2 wingspans then downgrade 4-5 points
- If the stall turn radius is greater than 2 wingspans the score shall be zero
- If the aircraft exhibits a pendulum effect after exiting the stall turn then deduct 1 point
- Must remain in the Box to avoid deductions

C-08 Slow Roll (K = 3)

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

Judging notes

- Constant roll rate.
- Roll should take 2 to 3 seconds as a guide.
- Model should be inverted on centre line.

C-09 Half Square Loop, Half Roll on Exit (K = 2)

Perform a $\frac{1}{4}$ loop into a vertical upline, perform a $\frac{1}{4}$ loop in to level inverted, perform a $\frac{1}{2}$ roll to upright

Judging notes

- Climb track not vertical.
- Short pause (half vertical line) between $\frac{1}{4}$ loop and $\frac{1}{2}$ roll.
- $\frac{1}{2}$ roll not exactly 180° .
- Corners not equal radius.
- Model to remain in box to avoid deductions.

C-10 Two Turn Spin (K = 3)

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 $\frac{1}{4}$ 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

C-11 Racetrack Landing Sequence (K = 2)

On completion of the previous 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.

Judging notes

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

The landing will not be downgraded if:

- The pilot elects sideslip to land due to crosswind conditions, in which case the upwind wing will be low
- Wing dips due to cross wind turbulence and is corrected IMMEDIATELY

5.1.3.2 Intermediate Schedule

I-01 Racetrack Take-Off Sequence (K = 1)

The model is placed on the take-off area, parallel to the flight line and released. The model rolls along the take-off area until flying speed is achieved, then establishes straight climbing flight parallel to the flight line. The model then turns through 180 degrees in a continuous turn and flies back over the manoeuvring area centre line. Take-off is completed once the centre line has been crossed and the model then performs a 180 degree turnaround of the pilot's choice, which is not scored.

Notes: Box limitations do not apply to this manoeuvre. On rough surfaces or when there is a crosswind, it is acceptable for a helper to restrain the model on the ground until take-off power is applied.

Judging notes

- Model does not track straight on take-off: 1-2 points. (Disregard the effect of the take-off surface e.g. ruts and potholes on grass sites)
- Wings not level after take-off: 1 point per 15 degrees
- Rate of climb too steep: 1-2 points above 30 degrees
- Model goes behind judge's line after take-off: zero points.
- Model retouches runway after lift-off: 1 point
- Any part of the aircraft structure becomes detached on take-off: zero points for the whole flight.

I-02 Inside Loop (K = 3)

From upright on the baseline at the centre line, pull through one inside loop to exit upright at baseline height.

Judging notes

- Loop should be of constant radius.
- Entry and exit should be same height and start / finish on centre line.
- Loop should be on the centred on centre line.

I-03 Half Reverse Cuban Eight (K= 2)

From upright on the baseline fly a horizontal line then pull through 1/8 of an inside loop into a 45° up line, half roll in the centre of this line. Pull through a 5/8 loop to exit upright on the baseline.

Judging notes

- All radii equal
- Entry and exit should be same height.
- Half roll should be centred on the 45° up line.
- Must remain in the Box to avoid deductions.

I-04 Slow Roll (K = 3)

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

Judging notes

- Constant roll rate.
- Roll should take 2 to 3 seconds as a guide.
- Model should be inverted on centre line.

I-05 Half Cuban Eight (K = 2)

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

Judging notes

- All radii equal
- Entry and exit should be same height.
- Half roll should be centred on the 45° down line.
- Must remain in the Box to avoid deductions

I-06 Immelmann and Split S Combination (K = 3)

From upright on the baseline pull up into a half inside loop immediately roll to upright, fly past centre on the top line then perform a half roll immediately followed by half an inside loop to exit upright on the baseline.

Judging notes

- Half roll immediately follows the half loop.
- Half loop immediately follows half roll.
- Constant radius through half loops
- Roll rates constant.
- Lines straight, level and wind corrected.

I-07 Humpty Bump Pull, Pull, Pull with Half Roll Up (K = 2)

Fly past centre on the baseline, pull up through a $\frac{1}{4}$ loop into a vertical up line. Half way through this line 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 $\frac{1}{4}$ loop to exit upright on the baseline.

Judging notes.

- Half roll centre of the line
- Constant radius
- Must remain in the Box to avoid deductions

I-08 Half Roll, Straight Inverted, Half Roll (K = 2)

Before centre half roll to inverted, fly through centre, half roll to upright

Judging notes

- Half rolls should be the same distance each side of centre
- Rolls rates consistent

I-09 Stall Turn (K= 3)

From upright on the baseline pull through a $\frac{1}{4}$ loop into a vertical up line, followed by a stall turn into a vertical down line. Pull through a $\frac{1}{4}$ loop to exit upright.

Judging notes

- If the stall turn radius is between half and 1 wingspan then downgrade 1 point
- If the stall turn radius is between 1 wingspan and 1.5 wingspans then downgrade 2-3 points

- If the stall turn radius is between 1.5 wingspans and 2 wingspans then downgrade 4-5 points
- If the stall turn radius is greater than 2 wingspans the score shall be zero
- If the aircraft exhibits a pendulum effect after exiting the stall turn then deduct 1 point
- Must remain in the Box to avoid deductions

I-10 Half Roll, Outside Loop from Bottom, Half Roll (K = 3)

From upright on the baseline roll to inverted, on centre push through one outside loop to exit inverted on the baseline, roll to upright.

(Note there should be a pause between the half rolls and the start/ finish of the loop)

Judging notes

- Constant radius
- Entry and exit should be same height
- Loop should be on the centre line
- Rolls rates consistent and line length same before and after

I-11 Humpty Bump Pull, Pull, Pull with Half Roll Down (K = 2)

Pull up through a $\frac{1}{4}$ loop into a vertical up line. At the top of the vertical up line pull through a half loop into a vertical down line. Half-way through this line perform a half roll. At the bottom of the down line, pull through a $\frac{1}{4}$ loop to exit upright on the baseline

Judging notes

- Half roll centre of the line
- Constant radius
- Must remain in the Box to avoid deductions

I-12 Cuban Eight with Half Rolls (K = 2)

From upright on the baseline fly past centre and pull through $\frac{5}{8}$ of an inside loop into a 45° down line. Perform a half roll then pull through $\frac{3}{4}$ of an inside loop into a 45° down line, perform a half roll then 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
- Rolls on 45° down lines must be over centre line

I-13 Half Square Loop, half roll on upline (K = 2)

From upright on the baseline pull through a ¼ loop into a vertical up line. Half roll in the centre of the line. Push through a ¼ loop to exit up right on the top line.

Judging notes

- All radii equal
- Roll to be centre of the upline
- Must remain in the Box to avoid deductions

I-14 Three Turn Spin (K = 3)

From upright on the top line, on the centre line of the box perform three 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

I-15 Racetrack Landing Sequence (K = 1)

On completion of the previous 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.

Judging notes

- Model does not follow landing sequence: zero points.
- Landing gear retracts or wheels come off on landing, zero points
- Model lands outside the zone: zero points
- 180 degree turns not 180 degrees 1-2 points
- Wings not level in downwind and upwind legs 1 point per 15 degrees
- Model does not track on runway after touchdown 1-2 points

- Model bounces on touchdown 1-2 points
- Model climbs and dives on downwind leg or final approach to runway 1-2 points
- Model changes heading left or right on approach to runway 1-2 points

The landing will not be downgraded if:

- The pilot elects sideslip to land due to crosswind conditions, in which case the upwind wing will be low
- Wing dips due to cross wind turbulence and is corrected IMMEDIATELY

5.1.3.3 FAI Schedules

The manoeuvre schedules for FAI A27, FAI P27 and FAI F27, the Unknown Manoeuvre List and F3P schedules AP and AF can be found in the FAI Sporting Code Section 4 Volume F3 – Radio Control Aerobatics.

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