F3A/L - NEW PROVISIONAL CLASS
Proposal from FRANCE

5.L.1. CLASS F3AL – LARGE AEROBATICS POWER MODEL AIRCRAFT

5.L.1.1. Definition of a Large Radio Controlled Aerobatics Power Model Aircraft

Model Aircraft, but not a helicopter, which is aerodynamically manoeuvred by control surface(s) in attitude, direction and altitude by a pilot on the ground using radio control.
The Model Aircraft should be a model of a real aircraft able to perform aerobatics. The competitor should prove it by providing a dossier including a minimum of a three-view drawing and a photograph of the real aircraft.

5.L.1.2. Definition of a competition for model aircrafts class F3AL

A competition for model aircraft class F3AL is based on three tasks:
- One task on a known schedule, valid for two years.
- One task on an unknown schedule, this unknown schedule is given to each pilot before the task, without any possibility of training. The difficulty of this task will be equivalent to the known schedule.
- A free schedule according to the choice of the pilot.

5.L.1.3. General Characteristics of a large Radio controlled Aerobatics Power Model Aircraft

Minimum overall span……2,4 m
(Biplanes minimum overall span……1,8 m)
Maximum overall span……3,0 m
Maximum Flying Weight without fuel…….. .20 kg
Maximum Flying area…….....500 dm2
Maximum Loading…….....250 g/dm2
Maximum swept volume of piston motor(s)…….....250 cm3

Paragraph B.3.1. of section 4b (Builder of Model Aircraft) is not applicable to class F3AL

Power source limitations, Noise rule, Radio Equipment: See 5.1.2

To be eligible for competing, the following documentation must be submitted to the judges at registration, before the start of the competition:
a) an accurate three view drawing of the subject aircraft (home made drawings by the competitor or other draftsman are not acceptable)
b) The dimensions are considered on the top view and side view of the subject aircraft.
c) The scale of the model aircraft is calculated from the wing span.
d) All dimensions may be checked. Tolerance is +/- 10%
e) The area of control surfaces compared to fixed surfaces will not be considered.
Example: only outside dimensions of the wing, stabiliser and fin will be considered, not ailerons, elevator or rudder, but the concept of moving surfaces must be the same as on the subject aircraft. (aileron in two parts, moving part of the fin for aerodynamic balance, trim are forbidden if not on the real aircraft.)
f) The competitor must be able to provide any technical data for technical checking. If the dimensions are not in accordance with the rules, the model aircraft is not allowed to fly and the competitor is disqualified.

5.L.1.4. Definition and number of helpers: see 5.1.3

5.L.1.5. **Number of flights**: Each competitor have the right to a minimum of three official flights (1 known schedule + 1 unknown schedule + one Free schedule)

5.L.1.6. **Definition of an attempt**: see 5.1.5.

5.L.1.7. **Number of attempt**: see 5.1.6.

5.L.1.8. **Definition of an official flight**: see 5.1.7.

5.L.1.9. **Marking:**

Each manoeuvre may be awarded marks, in whole number increments, between 10 and 0 by each of the judges during the flight. These marks are multiplied by a coefficient which varies with the difficulty of the manoeuvre. Any manoeuvre not completed shall be scored zero (0). Manoeuvres must be performed where they can be seen clearly by the judges. If a judge, for some reason outside the control of the competitor, is not able to follow the model aircraft through the entire manoeuvre, he may set the «Not Observed» (N.O.) mark. In this case, the judge's mark for that particular manoeuvre will be the average of the numerical marks given by the other judges. Centre manoeuvres should be performed in the centre of the manoeuvring area while turn around manoeuvres should not extend past a line 70 degrees left and right of centre. Vertical height should not exceed 60 degrees. Also, manoeuvres should be performed along a line of approximately 150 m in front of the pilots. Infractions to this rule will be cause for downgrading by each judge individually and in proportion to the degree of infraction. The manoeuvring area will be clearly marked with white vertical poles, a minimum of 100 mm in diameter and a minimum of 4m high, placed on centre and 70 degrees each side of centre on a line 150 m in front of the pilots. Flags and /or streamers of contrasting colour should be mounted on the poles to improve visibility. White (or contrasting) lines originating at the pilot's position and extending outward at least 50 m will also be used to mark the centre and extreme limits (70 degrees left and right of centre) of the manoeuvring zone. Audible and visual signals to indicate violations of the manoeuvring zone are not to be employed.

The judges shall be seated no more than 10 m, and not less than 7 m behind the pilot's position (the apex of the 70 degrees lines) and within an area described by the extension of the 70 degrees lines to the rear of the pilot.

At the conclusion of the flight each judge will independently consider if the in-flight noise level of the model aircraft is too noisy. If a majority of the judges consider the model aircraft too noisy, the flight score will be penalised 10 points for each counting judge.

If a model aircraft is in the opinion of the judges unsafe or being flown in an unsafe manner, they may instruct the pilot to land.

The scores given by each judge for each competitor shall be made public at the end of each round of competition.

5.L.1.10. **Classification**:

Classification will be done considering the sum of the three scores, known, unknown and free.
In the case two flights of each schedule have been completed, the sum of the best known and the best unknown scores will be considered.
In the case three flights have been completed, only the best score of the repeated flight (known or unknown will be added to the single other flight score.

Example: 1known and 2 unknown have been completed. Adding the «known» score to the best score of the 2 «unknown» flights will be considered to make the classification.

If possible, two free style flights (on the same or different schedule) will be performed, the best score is to be considered.

The final classification will be done by the sum of the 3 considered flight scores in each category multiplied by the following coefficients:

Known.....35%
Unknown.....45%
Free.....20%

1000 Points will be given to the pilot obtaining the highest total for his three retained flight scores. The scores are then normalised to 1000 points as described below:

$$\text{Points } x = \frac{Sx}{Sw} \times 1000$$

Points Sx = Points given to competitor x

Sx = Score of Competitor x

Sw = Score of Winner

The TBL system is not to be applied at the moment. As soon as possible, the organizers of competitions in this class may start to use a special program using the TBL system.

5.L.1.10. Judging:

The criteria of judging for manoeuvres to be applied in this class are strictly identical to class F3A. However, the judges will have to consider the dimensions and inertia of the model aircrafts. The manoeuvres are to be flown slower than with F3A model aircrafts, but should be more realistic.
The organiser must appoint a panel of five judges . For each manoeuvre only three marks are to be counted, the lowest and the highest marks have to be discarded.

5.L.1.12. Organisation for Large Radio Control Aerobatic Model Aircrafts Contests

For transmitters and frequency control, see section 4b, paragraph B.8.

The draw for flight order will be done for the first task (known, unknown or free), for the following tasks the flight order will start at ¼, ½, and ¾ of the list.

During the flight, the competitor must stay in the proximity of the judges and under the supervision of the Flight Line Director.

Competitors must be called at least five minutes before they are required to occupy the starting area.

If his frequency is clear, the competitor will be given his transmitter when he occupies the starting area so that he can perform a radio check. He will have to watch the model in flight at this moment to be sure not to disturb it.
If there is a frequency conflict he must be allowed a maximum of one minute for a radio check before the start of the 3 minute starting time. The timer will notify the competitor when the minute is finished and immediately start the 3-minute starting time.

5.L.1.13. Execution of manoeuvres

The manoeuvres must be executed during an interrupted flight in the order in which they are listed. The competitor may make only one attempt at each manoeuvre during the flight . The pilot has three minutes to start his motor and eleven minutes to complete his flight; both the three minutes and the eleven minutes to start when the competitor is given permission to start his motor.

The model aircraft must take-off and land unassisted, that is, no hand launched flights. If any part of the model aircraft is dropped during the flight, scoring will cease at the point and the model must be landed immediately.

The direction of the manoeuvres is given by the heading of the model aircraft during the take-off.

The flight ends when the landing sequence is completed.
Scoring will cease with the expiration of the eleven-minute limit time.
The competitor must land the model immediately after the schedule has been completed and the model aircraft is then allowed to fly only once in front of the judges. If more, the competitor will loose the landing points.
The model aircraft must be landed in the landing area defined by a 50 meters diameter circle or within two lines marked on the runway and separated by 100meters if the runway is larger than 10 meters.
The landing point is considered as the first point where the model aircraft touches the ground. Landing out of the landing area, or a crash is noted zero (0).
The landing sequence is ended when the model aircraft has run for 10 m or is stopped.

5.L.1.14. Schedules of manoeuvres.

a- The «known» schedule is valid for a two years period.

b- The «unknown» schedule is given to the competitors in the evening preceding the competition day, or in the morning of the competition day with no possibility of training . In case of training on the «unknown» schedule, the competitor must be disqualified.

This schedule must be completely new, unknown and not more difficult than the «known» schedule.
For each manoeuvre, judges and competitors must refer to the F3A rules which defines all manoeuvres and errors to be avoided. The same criteria of judging are to be used for dimensions of manoeuvres (70° on each side and about 150 m in distance).

Before the beginning of the task with the unknown schedule, the chief judge will brief the judges and the competitors to clearly define the different manoeuvres expected from the pilots.

The knowledge of the Aresti system is highly recommended to the pilots and the judges.

c- «Free Style» schedule:

Free Style schedules gives to the competitor the ability to demonstrate his own skill and the qualities of his model aircraft. The rules for the manoeuvres are not mandatory, however, safety remains.

The model aircraft flown by the competitor may be different from the one flown for the two other schedules provided this model aircraft conforms to the general characteristics of F3AL class.

The maximum duration of this flight is five (5) minutes after the take-off signal. The competitor will be notified at one minute before the end of the five-minute period.

After the end of the five-minute period, the manoeuvres are no more considered by the judges. If the model aircraft is still airborne, it must be landed immediately otherwise scoring might be heavily penalised.

Marking criteria

The Free style task includes 5 themes, each one is made of several criteria giving marks from 0 to 10,multiplied by a K coefficient.

Originality: three criteria:

New Manoeuvres: K= 2
The model aircraft flew manoeuvres not often in use or completely new showing the pilot personality.

Artifice, smoke producing or streamers K=1 . The use of devices (smoke producing or streamers) should be used only to punstuate or emphasise some manoeuvres. Even if many, a bad use should not bring too many points.

Harmony with music: K= 3
If there is a musical accompaniment, it should be in harmony with the flying and not only in the background.

Harmony and Rhythm: Two criteria

Setting of the manoeuvres: K= 2
The schedule must be well structured, with a good placing of the manoeuvres giving the best visibility with safety in the flying.

Sequence of manoeuvres: K= 2 The flight must keep the interest with a good sequence of coherent manoeuvres

Performing of the manoeuvres: Two criteria

Technicality of the manoeuvres: K= 2 . Complicated manoeuvres should give more points than easy ones and the quality of execution must remain.

Quality: K= 2 The flight must not show missed manoeuvres for the only reason it is «free style» which must remain of good quality and not demonstrate «circus».

Safety of the flight:

Safety: The judges must feel the full control of the pilots upon his model aircraft. At no moment the safety of the model aircraft or of the people being on the flying site may be in danger during the flight.

Diversity: K= 2

The model aircraft must not repeat the same manoeuvres or exceptionally, only to emphasize the musical theme.

5.L.1.15. Safety

The contest director will nominate a safety line officer. He is in charge of safety and will stand in the proximity of the pilot.
He must watch the model aircraft in flight and watch the pilot. He has the power to order a pilot to land his model aircraft immediately if necessary.

During the «Free style» schedule, the minimum distance from the manoeuvring area and the pilot must be at a minimum of 20 m. All manoeuvres performed at less than 20 m will be noted zero.
Near the 20m line, model aircraft should fly parallel to the public line, or away from it.

The frame defined for known and unknown schedule is not necessarily to be used for the Free schedule, however flying behind the pilot will be followed by the end of the flight with a zero (0) mark for that flight.

Known schedule manœuvres

	K-Factor
01 – Take-off Sequence	1
02 – Inverted figure N with rolls in each leg, exit inverted	6
03 – Half square loop, two 4/8 points rolls opposite down	3
04 – Loop, 3/2 points roll at the top	4
05 – Push-pull-pull humpty bump, ¼ roll up, ¾ snap down	4
06 – 45 degrees up, one positive snap, one negative snap down	5
07 – Inside rolling half loop with two half rolls, exit inverted	5
08 – Inside outside Cuban eight from top, 3/2 points roll in first leg, one negative snap in second leg, 3 points roll in third leg	6
09 – Half square loop, two four points rolls opposite up, exit inverted	4
10 – 1-1/2 turn inverted spin, then 1-1/2 negative snap opposite, exit inverted	5
11 – Push-pull-pull humpty bump, 1-3/4 snap up, 6/8 points roll down	4
12 – Rolling circle with 3 rolls reversed, first roll inside	5
13 – Half reverse Cuban eight, 6/4 points roll	4
14 – Three points roll, one positive snap opposite	5
15 – Immelmann, full roll, exit inverted	3
16 – 45 degrees down, 1-1/2 negative snap	5
17 – Landing sequence	1
Total K-factor	70

DESCRIPTION OF MANOEUVRES

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

Judging Notes :

- Take-off sequence not followed, zero points.
- Model aircraft passes behind the judges line (zero line), zero points.
- Only two scores, a zero or a 10, may be awarded for the take-off sequence.

02 – Inverted figure N with rolls in each leg, exit inverted : Pull to a vertical upline and perform two points of a eight point roll then perform three fourths of a roll in the opposite direction, push to a 45 degrees downline and perform a positive snap roll over the center flag, pull to a vertical upline and perform a two point roll, pull to inverted flight and perform a negative snap roll over the center flag, exit inverted.

Judging Notes :

- The first snap must be positive, and the second must be negative.
- In the first vertical leg, the roll direction is optional, but the second roll must be in opposite direction.

03 – Half square loop, two 4/8 points rolls opposite down: Pull to a vertical downline and perform four points of a eight point roll, followed by four points of a eight point roll in opposite direction, then pull to recover upright.

Judging Notes :

- The first roll direction is optional, but the second must be in opposite direction.
- The two half rolls must be in the center of the vertical leg.

04 – Loop, 3/2 points roll at the top : Pull up and execute a half loop, at the top perform three points of a two point roll, push and complete a half outside loop to recover inverted

Judging Notes :

- The three points of a two point roll centred at the top of loop.
- Loop is round with three points of a two point roll integrated with roll.

05 – Push-pull-pull humpty bump, ¼ roll up, ¾ snap down, exit inverted : Push to a vertical upline and execute a quarter roll, pull and complete a half inside loop to a vertical downline, perform a ¾ negative snap roll, pull to recover upright.

Judging Notes :

- Half loop at top must be inside loop.
- Rolls must be centred on the vertical legs
- Entry and exit altitude need not be the same.

06 – 45 degrees up, one positive snap, one negative snap down : Pull to a 45 degrees upline and perform a positive snap roll, push to a vertical downline and perform a negative snap roll, pull to recover upright

Judging Notes :

- The vertical downline is over the center flag.
- The first snap must be positive, and the second must be negative.

07 – Inside rolling half loop with two half rolls, exit inverted : Pull up and complete a half loop with two half roll in opposite direction and integrated with the entire half loop, exit inverted.

Judging Notes :

- The roll rate must be constant.
- No hesitation between the two half rolls.
- The half loop must be in vertical plane.

08 – Inside outside Cuban eight from top, 3/2 points roll in first leg, one negative snap in second leg, 3 points roll in third leg : Pull to a 45 degree inverted downline and perform three points of a two point roll, then perform three fourths of an inside loop. On the second 45 degree inverted downline, perform a negative snap roll followed by three fourths of an outside loop. On the third 45 degree downline perform a three point roll, then pull to recover upright.

Judging Notes :

- The rolls should be centred.
- The lines must be 45 degree and the crossing in center.

09 – Half square loop, two four points rolls opposite up, exit inverted : Pull to a vertical upline and complete a half square loop. On the upline perform a four point roll in either direction then immediately perform a four point roll in the opposite direction. Exit inverted

Judging Notes :

- The rolls should be centred.
- Hesitation between rolls is very brief.

10 – 1-1/2 turn inverted spin, then 1-1/2 negative snap opposite, exit inverted : From an inverted horizontal line perform a 1-1/2 turn inverted spin then 1-1/2 negative snap roll in the opposite direction. Push to recover inverted.

Judging Notes :
- The spin and the roll must be in opposite direction.
- The snap roll must be a negative snap roll.

11 – Push-pull-pull humpty bump, 1-3/4 snap up, 6/8 points roll down : Push to a vertical upline and execute 1-3/4 positive snap roll then pull through a half inside loop to a vertical downline. On the downline perform six points of a eight point roll, pull to recover upright.

Judging Notes :
- Half loop at top must be inside loop.
- Rolls must be placed on the middle of the lines.
- Entry and exit altitude need not be the same.

12 – Rolling circle with 3 rolls reversed, first roll inside : From an horizontal flight perform a rolling circle with three rolls in alternative directions with the first roll to the inside.

Judging Notes :
- Constant roll rate.
- Immediate reversals.
- Constant radius of circle (i.e. circle is wind corrected).
- Entry and exit at the same point.
- Manoeuvre should be downgraded if the circle is too large and too far out.

13 – Half reverse Cuban eight, 6/4 points roll : Pull to a 45 degree upline, execute six points of a four point roll then pull and complete five eighths of an inside loop to recover in horizontal flight.

Judging Notes :
- The roll must be placed on the middle of the 45 degree upline.

14 – Three points roll, one positive snap opposite : On a horizontal line perform a three point roll followed by a positive snap roll in the opposite direction.

Judging Notes :
- Manœuvre should project a straight horizontal line throughout.
- The points must be of 120 degree.
- The roll and the snap roll must be in opposite direction.
- The whole manœuvre should be centered.

15 – Immelmann, full roll, exit inverted : Perform half of an inside loop followed immediately by one aileron roll. Exit inverted.

Judging Notes :
- There is no hesitation between the half loop and the roll.

16 – 45 degrees down, 1-1/2 negative snap : Pull to a 45 degree downline and perform 1-1/2 negative snap roll. Pull to recover in horizontal flight.

Judging Notes :
- The snap roll is over the center flag.

17 – 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 the wind. Fly a descending approach to the runway touching down in the landing zone. The landing sequence is complete when the model aircraft has either rolled 10 meters or comes to rest.

Judging Notes :

- Model aircraft does not follow landing sequence, zero points.
- If any landing gear leg retracts on landing, zero points.
- If the model aircraft lands outside the landing zone, zero points. The landing zone is designated by a circle of 50 m radius or lines across a standard runway spaced 100 meters apart where the runway is at least 10 m wide.
- Only two scores, a zero or a ten, may be awarded for the landing sequence.