CIAM F3 RC Aerobatics Subcommittee

CIAM E-Plenary Meeting 2021

F3 RC Aerobatics Subcommittee Technical Meeting

Saturday April 10

13.00 CEST

CIAM F3 RC Aerobatics Subcommittee

F3 RC Aerobatics Classes:

F3A

F3M

F3P

F3S

CIAM F3 RC Aerobatics Subcommittee

23 Members from all continents

Several Working Groups

Chairman Peter Uhlig

CIAM F3 RC Aerobatics Subcommittee

Subcommittee Work 2020/2021

Discussions within the Subcommittee and relevant Working Groups:

- about better defining some aerobatic manoeuvres in the Manoeuvre Execution Guide,
- how to integrate subjective elements of the manoeuvre execution guide into downgrade/deduct system,
- about simplifying and amending noise checking of F3A models at Cat 1 events,
- about rule clarifications,
- how to use computer programmes for creating unknown schedules and simplifying Team Manager Meeting before Final,
- about Subcommittee approval of scoring software,
- about new manoeuvre schedules for F3A A-25, P-25 and F-25,
- about new manoeuvre schedules for F3P Aerobatics F3P AA-23, AP-23 and AF-23,

CIAM F3 RC Aerobatics Subcommittee

The chairman

- **worked on a "schedule composition kit", a collection of editable manoeuvre drawings to simplify doing draft Aresti drawings for future schedules,**
- **provided judging presentations for F3A schedules A-23, P-23, F-23 and manoeuvre schedule descriptions for F3P-23 schedules and F3A-25 schedules,**
- **prepared and submitted Sporting Code proposals to FAI together with additional proposals for F3A sequences A-25, P-25 and F-25 and F3P sequences AA-23, AP-23 and AF-23,**
- **supported the Romanian organizer of 2021 F3P World Championships to create Bulletin 0,**
- **contacted and gave some advice to US organizers of 2021 F3A World Championship,**
- **took part in CIAM Bureau discussions,**
- **developed a guide for having Aerobatic competitions in Covid 19 times for CIAM,**
- **attended several E-Bureau Meetings and all E-Technical Meetings of 2020 CIAM E-Plenary Meeting.**

CIAM F3 RC Aerobatics Subcommittee

CIAM E-Plenary Meeting 2021:

26 Proposals on the agenda

Let‘s go to the agenda now!

F3 Aerobatics Proposals 2021

Proposal		Proposal by	Short description of the change	Subcommittee Voting			Conclusion
				yes	no	abst.	
a)	5.1.2 b) General Characteristics	USA	Displacement restriction for IC Engines	2	18	0	not recommended
b)	5.1.2 f) General Characteristics	F3 Aero	Noise test only for noisy models	17	1	0	recommended by vast majority
c)	5.1.2 g General Characteristics	F3 Aero	Consequence of b)	17	1	0	recommended by vast majority
d)	5.1.8 k) Marking	F3 Aero	Consequence of b)	17	1	0	recommended by vast majority
e)	5.1.8 m) Marking	F3 Aero	Paper copies of scores for TM	20	0	0	unanimously recommended
f)	5.1.8 b) Marking	FRA	Use of 1 point steps for downgrades	2	16	2	not recommended
g)	5.1.9 e) Classification	FRA	Change normalization of rounds	18	2	0	recommended by vast majority
h)	5.1.11 e) Organisation for R/C Aerobatics Contests	F3 Aero	Use of 2 flightlines for Semi Final	19	1	0	recommended by vast majority
i)	5.1.11 f) Organisation for R/C Aerobatics Contests	F3 Aero	Clarifies starting order for final flights	18	0	0	unanimously recommended
j)	5.1.10 e), f) Judging	F3 Aero	Clarifies number of judges	20	0	0	unanimously recommended
k)	Annex 5B Manoeuvre Execution Guide 5B8.5 d), e)	F3 Aero	Clarifies judging of rolls	16	0	0	unanimously recommended
l)	Annex 5B Manoeuvre Execution Guide 5B8.9 a), b)	F3 Aero	Judging of Circles and Part Cirlcles	18	0	0	unanimously recommended
m)	Annex 5B Manoeuvre Execution Guide 5B8.10	F3 Aero	Consequence of l)	18	0	0	unanimously recommended
n)	Annex 5B Manoeuvre Execution Guide 5B.3, 5B.4	F3 Aero	Adapts judging criteria to downgrade/ deduct system	16	1	0	recommended by vast majority
o)	Annex 5B Manoeuvre Execution Guide 5B.8.4	F3 Aero	Integration of Smoothness and Gracefulness criteria	16	1	0	recommended by vast majority
p)	Annex 5B Manoeuvre Execution Guide 5B9.	F3 Aero	Integration of Smoothness and Gracefulness criteria	16	1	0	recommended by vast majority
q)	Annex 5B Manoeuvre Execution Guide	F3 Aero	Integration of Size in downgrade/deduct system	16	1	1	recommended by vast majority
r)	Annex 5G Unknown Manoeuvre Schedule 5G2.	F3 Aero	Secret creating unknowns for Final	19	1	0	recommended by vast majority
s)	Annex 5G Unknown Manoeuvre Schedule 5G3.	F3 Aero	Defining end of last manoeuvre	10	0	0	unanimously recommended
t)	5.1.13 Schedule of Manoeuvres	F3 Aero	Schedule F3A A-25	**25 F3A schedules have been selected from more than one sequence. The finally proposed A-25, P-25, F25 are supported by a clear majority of subcommittee members.**			
u)	5.1.13 Schedule of Manoeuvres	F3 Aero	Schedule F3A P-25				
v)	5.1.13 Schedule of Manoeuvres	F3 Aero	Schedule F3A F-25				
w)	Annex 5A – Aerobatic Description of Manoeuvres	F3 Aero	Manoeuvre descriptions F3A				
x	5.10.11 Classification	FRA	Changes weighting of knowns and unknowns in F3M	12	1	7	recommended by majority
y)	5.9.13 Schedule of Manoeuvres	F3 Aero	F3P Schedules AA-23, AP-23, AF-23	17	0	1	recommended by vast majority
z)	Annex 5M – Indoor Aerobatic Description of Manoeuvres	F3 Aero	Manoeuvre descriptions F3P	17	0	1	recommended by vast majority

14.7 Section 4C Volume F3 – Aerobatics

F3A – R/C Aerobatic Aircraft

a) 5.1.2 General Characteristics … USA

Add a sentence to sub-paragraph b) as shown below:

b) Propulsion device limitations: Any suitable propulsion device may be utilised. Propulsion devices that are not permitted are those requiring solid expendable propellants, gaseous fuels (at room temperature and atmospheric pressure), or liquefied gaseous fuels. **Internal combustion engine displacement shall be limited to 32.7741 cubic centimetres (2.00 Cubic Inches).** Electric powered model aircraft are limited to a maximum of 42.56 volts for the propulsion circuit, measured off load, and prior to flight while the competitor is in the ready box.

Reason: The proposals sets the maximum displacement for internal combustion engines.

Subcommitee	Yes	No	Abst.
Votes: 20	2	18	0

Subcommittee Chairman's comment on a): There are only a few pilots with CI engines who will have many problems with less nitro fuels which must be used in many countries. Weight limit (5kg) will avoid engines with much more displacement. Additionally it will be complicated to check correct displacement.

b) 5.1.2 General Characteristics … F3 Aero Subcommittee

Modify sub-paragraph f) as shown below:

f) With the propulsion device running at full power, the measurement will be taken 90 degrees on the right-hand side, with the nose of the model aircraft pointing into the wind. The SLM microphone shall be placed on a stand 30cm above the ground in line with the propulsion device Other than the helper restraining the model aircraft, and the sound steward, no persons or sound/noise reflecting or sound absorbing objects shall be nearer than 3m to the model aircraft or the microphone. The sound/noise measurement shall be made ~~as part of model processing.~~ **only if a majority of the judges consider the in-flight sound level of the model aircraft to be too loud.** Electric powered model aircraft must have installed the same batteries ~~for all model processing procedures.~~ **as during the flight with noise problems. Batteries must be recharged before the noise test.** The sound test area must be located in a position that does not create a safety hazard to any person around. Noise measurements shall not be taken with wind readings taken over 30 sec of more than 5m/s. Gusts shall be avoided. **Noise measurement equipment shall be made available during model processing should a pilot request a noise measurement to confirm that his models are within the regulations.**

Reasons: F3A models are quiet and a general noise measuring is not necessary anymore. The model processing will be simplified. Competitors will have the possibility for a test.

Subcommitee	Yes	No	Abst.
Votes: 18	17	1	0

c) 5.1.2 General Characteristics … F3 Aero Subcommittee

Modify sub-paragraph g) as shown below:

g) In the event of a model aircraft failing the sound/noise test, indication of the result or the reading shall be given to the competitor, and his team manager, and both the transmitter and the model aircraft shall be impounded by a flight line official immediately following the sound test. The competitor and his equipment shall remain under supervision of the flight line official, while ~~modifications or adjustments may be made and~~ the propulsion battery is fully recharged. The model aircraft shall be re-tested under regular operational conditions within 90 minutes by a second noise steward using a second Sound Level ~~Metre~~ **Meter**, and in the event that the model aircraft fails the re-test, ~~its entire model processing has failed~~. **the score for the preceding flight will be zeroed. The competitor may proceed in the competition with his reserve model aircraft. Should this model aircraft be considered to be noisy by the judges, the procedure is the same as explained above.**

Reason: Consequence of change in 5.1.2. f).

Subcommitee	Yes	No	Abst.
Votes: 18	17	1	0

d) 5.1.8 Marking F3 Aero Subcommittee

Amend sub-paragraph k) with the deletion and addition of the text as shown:

k) At the conclusion of the flight, each judge must independently consider if the in-flight sound level of the model aircraft is too loud. If a majority of the judges consider the in-flight sound level of the model aircraft to be too loud, ~~then the flight score will be penalised by 10 points for each counting judge on that panel during the flight.~~ **a noise test shall be done according to 5.1.2 f) and 5.1.2 g).** ~~If, during a flight, the sound level of the model aircraft increases perceptibly as a result of an equipment malfunction, or of a condition initiated by the competitor, the flight line director may request a sound re-test and in the event that the model aircraft fails the re-test, the score for the preceding flight shall be zero. For this re-test, both, the transmitter and the model aircraft shall be impounded by a flight line official immediately following the flight. No modification or adjustment to the model aircraft shall be permitted (other than refuelling or battery recharging). The competitor and his equipment shall remain under supervision of the flight line official. The model aircraft shall be re-tested under regular operational conditions within 90 minutes.~~ If an equipment malfunction during the flight (such as mechanical failure of the exhaust/muffler system) causes excessive noise, the flight line director may request the competitor to land his model aircraft, and scoring shall cease from the point of malfunction.

Reasons: Consequence of change in 5.1.2. f) and g).

Subcommitee	Yes	No	Abst.
Votes: 18	17	1	0

Subcommittee Chairman's comment on b), c), d): *These proposals simplifiy model processing. A noise check for each pilot isn't necessary because F3A models aren't noisy anymore, seldom full throttle is needed. Judges will dedect noisy models and then they will be checked with all consequences.*

e) 5.1.8 Marking **F3 Aero Subcommittee**

Amend sub-paragraph m) with the deletion and addition of the text as shown:

m) The individual manoeuvre scores given by each judge for each competitor must be made public at the end of each flight of competition. The team manager must be afforded the opportunity to check that the scores on each judge's score document correspond to the tabulated scores (to avoid data capture errors). ~~The~~ **A** score board/monitor must be located in a prominent position at the flight line, in full view of the competitors and the public. **At World-and Continental Championships a paper copy of the scores of each competitor must be given to their team manager.**

Reason: For team managers, it is easier to have a paper copy to check and analyze scores.

Subcommitee	Yes	No	Abst.
Votes: 20	**20**	0	0

Subcommittee Chairman's comment on e): *At the 2019 F3A World Championship the organizer denied to give paper copies to teammanagers. This was not appreciated. The avaible screen was small and not really visible. Pilots and teammanagers pay high entree fees. So it should be possible to print out scores.*

f) 5.1.8 Marking **France**

Amend sub-paragraph b) with the deletion and addition of the text as shown:

b) Each manoeuvre may be awarded marks by each of the judges during the flight. Every manoeuvre starts with the mark of 10 points and will be downgraded for each defect during the execution of the manoeuvre in one or multiple ~~0.5~~ **1 point** steps, depending on the severity of the defect. The remaining points result in the mark for the manoeuvre. During tabulation, these marks are multiplied by a coefficient (K-Factor) which relates to the difficulty of the manoeuvre.

Reasons: The majority of the members of the Subcommittee F3 Radio Control Aerobatics believed that the use of half-points would better decide between high-level pilots.

During the last 2018 F3A European Championship in BELGIUM and the last F3A World Championship 2019 in Italy, it appears that scoring using half points had an opposite effect than expected by closing the gaps between the top pilots.

It seems to be common sense to go back by scoring with whole numbers.

Technical Secretary Comment: The change from 1 to 0.5 point steps was agreed at Plenary 2017 for introduction in 2018. This proposal to reverse that decision was submitted for the 2019 Agenda but was withdrawn by France at the Plenary Meeting. The comment remains the same as in 2019; that this proposal will result in substantial changes in Manoeuvre Execution Guide (Annex 5B), which have not been included.

Subcommitee	Yes	No	Abst.
Votes: 20	2	**16**	2

Subcommittee Chairman's comment on f): *Completely agree with Technical Secretary. Changes in the Manoeuvre Execution Guide are not includedd.*
Judging with half points downgrades is well accepted and appreciated by the judges.

g) 5.1.9 Classification **France**

*Add text to sub-paragraph e) as shown below. Refer to **Annex 7g** for the supporting data tables:*

e) All scores for each round, preliminary, semi-final and finals, will then be normalized as follows: **When all competitors have** ~~The average score of the top half of competitors~~ flown in front of a particular group of judges (i.e. a round), **the highest score** shall be awarded 1000 points. The remaining scores for that group of judges are normalized to a percentage of the 1000 points in the ratio of actual score over this average score.

$$\text{Points } x = \frac{S_x}{S_w} \times 1000$$

Points *x* = points awarded to competitor *x*
S_X = score of competitor *x*
S_W = score of winner of round.

Reason: During the last 2018 F3A European Championship in BELGIUM and different World Cup or other events, the classification system showed a lot of imperfections, the same that lead the F3C to stop using it during a WC event.

During the 2019 F3A World Championship in ITALY, due to the complexity of this process, the classification after the semi-final was wrong with 9 pilots mis-ranked. The most serious is that because of this one competitor was expelled from the final instead of another.

It is a very serious incident, never seen in a World or Continental Championship, which must not happen again. For this we must return to the traditional 1000 ratio which has proven its effectiveness for many years.

Technical Secretary Comment: This proposal was submitted for the 2019 by France but it was rejected by the Plenary Meeting: For: 11; Against 17. Therefore, this proposal seeks to reverse a decision that was made by Plenary two years ago.

Note 2: Following discussion, this proposal has subsequently been supported by the F3 Aerobatics Subcommittee.

Subcommitee	Yes	No	Abst.
Votes: 20	18	2	0

Subcommittee Chairman's comment on g): *Judge's panels play an important role. As long you have only one panel of judges the differences between current and proposed normalization are small. But two judge's panels could have not the same standard deviation, what creates big gap of points between the winners of the different rounds. For example: The winner of the first round has 1108 points (panel 1) and the winner of the second round has 1160 points (panel 2)*
For comparing rounds the number of pilots needs to be the same. For Preliminary scores which are used for semifinal a recalculation with the number of semifinalists is necessary. Otherwise rounds are not comparable. An additional proposal to clarify the case was necessary in 2019.
A big problem is that you can't see the error with a short look at the calculation. It is necessary to recalculate which difficult for organizers and FAI Jury members after a long Semi-Final day.
Errors caused by not comparable numbers of pilots occured during World Cup competitions at all Cat 1 events since 2018. At the 2018 European F3A Championship and 2019 F3P World Championship the error was dedected in time. At the 2019 World Championship the mistake was dedected too late and affected the final participants.
After two years using this way of normalization the F3Aerobatics Subcommittee supports the

proposal from France with clear majority, and is in favour to have a decision at the 2021 Plenary in the interst of pilots and organizers.

h) 5.1.11 Organisation for R/C Aerobatics Contests F3 Aero Subcommittee

In sub-paragraph e), add the text as shown below.

e) The flight order for the first semi-finals round will also be by random draw. The second semi-finals flight will start ½ way down the semi-finals flight order**. <u>If two flight lines are used for the Preliminary rounds, two flight lines must be used for the semi-finals. The first semi-final round will start at flight line one according to the flight order, the second round at flight line two starting half (½) way down the semi-finals flight order for round one.</u>**

<u>Reason</u>: Two flight lines are necessary for World Championships, when four panels of judges are used. The semi-final day can be run more smoothly and without time pressure, if the two available flight lines will be used for semi-final, too.

Subcommitee	Yes	No	Abst.
Votes: 20	19	1	0

Subcommitee Chairman's comment on h): If only one flightline is used you need to start very early and finish will be very late. Results have to be checked and Teammanager Meeting needs to take place in time, especially creating unknowns.

i) 5.1.11 Organisation for R/C Aerobatics Contests F3 Aero Subcommittee

Modify sub-paragraph f) as shown below.

f) The flight order for the first round of the finals will be established by a random draw as above. **<u>Team members will be separated by one competitor.</u>**

<u>At World or Continental Championship with 40 and more competitors</u> ~~The~~ **the** flight order for flights two and three will start **<u>at position 4, and 7</u>** ~~⅓ and ⅔~~ down the finals flight order ~~with decimals rounded-up.~~
<u>At World or Continental Championship with less than 40 competitors, the flight order for flights two, and three will start at position 3, and 5 down the finals flight order.</u>

<u>Reason</u>: The draw and the flight order for F3A final flights will be better defined.

Subcommitee	Yes	No	Abst.
Votes 18	18	0	0

Subcommittee Chairman's comment on i) : This proposal avoids discussion about rounding of 1/3 and 2/3 for starting order of the ten finalists.

j) 5.1.10 Judging **F3 Aero Subcommittee**

Add the text to sub-paragraphs e) and f) as shown below:

e) For **World or** Continental Championships with 40 or fewer competitors, the organiser must appoint a single panel of five judges, with the same selection criteria as above.

f) For World or Continental Championship with 80 or fewer, but more than 40, competitors two panels of five judges may be used for the preliminary and semi-final rounds, and one panel of ten judges may be used for the final rounds. For a **World or** Continental Championship with 40 or fewer competitors, one panel of five judges may be used for preliminary, semi-final, and final rounds.

Reason: The proposal clarifies the number of judges for a World Championships with 40 competitors and fewer.

Subcommitee	Yes	No	Abst.
Votes: 20	20	0	0

k) Annex 5B Manoeuvre Execution Guide **F3 Aero Subcommittee**

Modify sub-paragraph 5B.8.5, with the deletions and additions as shown below. Note that the following parts are unchanged: a), b), c), and the final two paragraphs.

5B.8.5. **ROLLS**

Rolls and part-rolls may be performed as individual manoeuvres, or as parts of other manoeuvres. The following applies to all continuous rolls **(continuous rolling 360 degrees and more)** and part-rolls **(rolling less than 360 degrees)** as well as to consecutive continuous rolls and part-rolls:

d) In all manoeuvres which have more than one continuous roll, the continuous rolls must have the same roll-rate. In all manoeuvres which have more than one part-roll, the part-rolls must have the same roll rate. **Where there are continuous rolls and part-rolls within one manoeuvre, the roll-rate for the part-rolls does not necessarily have to be the same as the roll-rate for the continuous rolls. The roll-rate of the first continuous roll or part roll of a manoeuvre does not define the roll-rate for the remaining continuous rolls or part rolls of a manoeuvre but it is a starting point. As the manoeuvre progresses, the judge will compare the roll-rate of each continuous roll or part roll that was just flown to the roll-rate of the last flown continuous roll or part roll and if there is a difference, then a downgrade will be given based on the severity of the difference. In a manoeuvre with both continuous rolls and part rolls the two types of rolls must be considered separately for roll rate deviations.**

Note: 5B.8.5.d) doesn't apply to integrated rolls and integrated part rolls.

~~Lines between consecutive part-rolls must be short and of equal length. Between consecutive continuous rolls or part-rolls in opposite direction there must be no line. . Where there are continuous rolls and part-rolls~~

~~within one manoeuvre, the roll-rate for the part- rolls does not necessarily have to be the same as the roll-rate for the continuous rolls.~~

e) Lines between consecutive part-rolls must be short and of equal length. Between consecutive continuous rolls or part-rolls in opposite direction there must be no line.

Reason: Clarification of continuous rolls and part rolls, clarification for judging rolling speed in manoeuvres with more than one roll and more than one part roll.

Subcommitee	Yes	No	Abst.
Votes 16	16	0	0

Subcommittee Chairman's comment on k): This is a better definition of continuous rolls and part rolls. The judging of rolling speed of more than one continuous or part roll will be defined as already done for radii in 2017.

l) Annex 5B Manoeuvre Execution Guide — F3 Aero Subcommittee

Modify sub-paragraph 5B.8.9, by deleting the existing section as part a), with the additions as shown below. Add a new part b) as shown below:

5B.8.9. ~~HORIZONTAL~~ CIRCLES

a) Horizontal Circles and Part Circles

Horizontal circles are performed in a horizontal plane and mostly used as centre manoeuvres. **Horizontal Part Circles are mostly part of a manoeuvre.** They may be positioned at a higher or lower altitude. Horizontal circles **and Part Circles** are mainly judged about the circular flight path, constant altitude of the circle, and by constant rates of roll, and integration of the continuous rolls or part-rolls with the circle, if applicable.

The circular flight path should be maintained throughout the manoeuvre and there must be no deviation in altitude. At low level it may be more difficult for judges to determine the roundness of the circle. The 150m distance requirement is waived for horizontal circles, and a downgrade should only be applied if the far side of the circle exceeds approximately 350m. Deviations from geometry should be downgraded as in loops and using the 1 point per 15 degree rule. **Circles and Part Circles within a manoeuvre must have the same radius. Each occurrence of a minor deviation in radius must be downgraded by 0.5 point, while more severe deviations may downgraded by 1, 1.5, 2 or more points for each occurrence.**

Depending on the distance from the pilot at the entry, horizontal circles may be performed away from, or towards, the pilot and are at the pilot's discretion.

Other horizontal manoeuvres as combinations of horizontal circles or part-circles with lines etc have to be judged accordingly.

b) 45° Plane Circles and 45° Plane Part Circles

45° Plane circles are performed on a 45° plane and mostly used in centre manoeuvres. 45° Plane Part Circles are mostly part of a manoeuvre. They are judged with same criteria as Horizontal Circles and Part Circles. As they are not horizontal they cannot be judged

by constant altitude.

Reason: Circles and part circles 45° plane circles and 45° plane part circles needed to be defined. Judging of circles and part circles needed to be clarified.

Subcommitee	Yes	No	Abst.
Votes: 18	18	0	0

m) Annex 5B Manoeuvre Execution Guide — F3 Aero Subcommittee

Modify sub-paragraph 5B.8.10, with the addition as shown below:

5B.8.10. LINE/LOOP/ROLL/HORIZONTAL CIRCLE COMBINATIONS

These are much diversified, but all are combinations of lines, loops, part-loops, continuous rolls, part-rolls, snap-rolls, horizontal circles, and horizontal part-circles, **45° plane circles and 45° plane part circles.** The judging of all these components applies as described above. …

Reason: 45° plane circles and 45° plane part circles will be implemented in the rule.

Subcommitee	Yes	No	Abst.
Votes: 18	18	0	0

Subcommittee Chairman's comment on l), m): Due to the fact that more and more (part) circles have occured and will occur in future F3 Aerobatic schedules it was necessary to explain performing and judging in the manoeuvre execution guide and integrating (part) circles into LINE/LOOP/ROLL/HORIZONTAL CIRCLE COMBINATIONS..

n) Annex 5B Manoeuvre Execution Guide — F3 Aero Subcommittee

Add the new text as 5B.3, as shown; rename old 5B.3 as 5B.4, and delete the old 5B.4 as shown:

5B.3. EXECUTION OF MANOEUVRES

All manoeuvres should be executed with:
Geometrical Accuracy;
Constant Flying Speed;
Correct positioning within the manoeuvring zone;
Size matching to the size of the manoeuvring zone.

5B.~~3~~4. ACCURATE AND CONSISTENT JUDGING

The most important aspect of consistent judging is for each judge to establish his standard and then maintain that standard throughout the competition. ……

~~5B.4. PRINCIPLES~~

~~The principles of judging the performance of a competitor in an R/C Aerobatic competition is based on the perfection with which the competitor's model aircraft executes the aerobatic manoeuvres as described in Annex 5A. The main principles used to judge the degree of perfection are:~~

~~1. Geometrical accuracy of the manoeuvre; (weighting approximately 60%).~~

~~2. Smoothness and gracefulness of the manoeuvre; (weighting approximately 20%).~~

~~3. Positioning of the manoeuvre within the manoeuvring zone; (weighting approximately. 10%).~~

~~4. Size of the manoeuvre; (weighting approximately 10%).~~

Reason: Clarification of execution of manoeuvres, deleting percentage of weighting in judging criteria to adapt all criteria to downgrade/deduct system.

Subcommitee	Yes	No	Abst.
Votes: 17	16	1	0

o) Annex 5B Manoeuvre Execution Guide **F3 Aero Subcommittee**

Modify sub-paragraph 5B.8.4, with the additional text as shown below:

5B.8.4. LOOPS

..., and eight-sided loops, the main criteria are that the loop must have the sides at the same lengths/correct angles for the defined number of times, and all part-loops must have the same radius.

Part loops must have a recognisable radius which must not be too tight (very high G-load) or too loose (a well-defined line between the part loops is not clearly recognisable). If part loops are performed too tight or too loose, up to one point must be deducted.

Reason: Integration of smoothness and gracefulness into downgrade/deduction system.

Subcommitee	Yes	No	Abst.
Votes: 17	16	1	0

p) Annex 5B Manoeuvre Execution Guide **F3 Aero Subcommittee**

Delete the current 5B.9, add the following (bold underlined) heading and text as new 5B.9, as shown below:

~~**5B.9. SMOOTHNESS AND GRACEFULNESS OF THE MANOEUVRE**~~

~~Concerns the harmonic appearance of an entire manoeuvre; i.e. maintaining a constant flight speed throughout the various manoeuvre components, like in climbing and descending sections contributes significantly to smoothness and gracefulness. Radii performed very tight or very loose, though being of equal size within one manoeuvre may be subject for downgrading Smoothness and Gracefulness.~~

5B.9. CONSTANT FLYING SPEED

The model aircraft shall maintain a constant flight speed throughout the various manoeuvre components; for example, in climbing and

descending sections. For significant differences up to one point is subtracted.

Reason: Constant Flying Speed as a criterion of execution of manoeuvres will be defined and integrated into downgrade/deduct system.

Subcommitee	Yes	No	Abst.
Votes: 17	16	1	0

Subcommittee Chairman's comment on n), o), p): The weighting of marks contradicts the downgrade/deduct system. Judging must be done with downgrades and must not use “feelings”. So "Smoothness and Gracefulness" criteria will be integrated in the downgrade/deductsystem as “Constant Flying Speed” and “appearance of radii” into loops.

q) Annex 5B Manoeuvre Execution Guide — F3 Aero Subcommittee

Modify sub-paragraph 5B.11, with the additions as shown below:

5B.11. SIZE OF THE MANOEUVRE

The size of a manoeuvre is ~~scored~~ **defined** by its matching size relative to the size of the manoeuvring zone and relative to the size of the other manoeuvres performed throughout a schedule. **For not matching size up to 1 point downgrade.**

Reason: Adaption of size of manoeuvres to downgrade deduct/system.

Subcommitee	Yes	No	Abst.
Votes: 17	16	1	0

Subcommittee Chairman's comment on q): Deducts for not matching size size criterion will be defined

r) Annex 5G Unknown Manoeuvre Schedule … — F3 Aero Subcommittee

Modify sub-paragraph 5G.2, with the deletion and additions as shown below:

5G.2. If the composition of the unknown manoeuvre schedules is done by the finalists, each finalist nominates in turn an appropriate centre or turn-around manoeuvre from the approved and published list of manoeuvres. This nomination and selection of manoeuvres may be either manual or computer-aided. The order of selection will be determined following the random flight draw with the order repeating until the manoeuvre schedule is complete.

If the composition of the unknown manoeuvre schedules is done by Subcommittee approved software, three unknown schedules should be generated for each required unknown schedule, by the contest director, in the presence of the FAI Jury members in advance of the Finals. The unknown schedules must be kept secret. At the Team Managers meeting, a random draw by the contest director will select the required number of unknown schedules.

The nominated and selected manoeuvres must conform to the following general criteria:

… (no change to the criteria)

~~If the composition of the unknown schedules is done by computer software, then criteria 1 - 9 apply accordingly.~~

The end of the last manoeuvre of the unknown sequences must be defined clearly during the Team Managers meeting before the Final.

Reason: The team manager meeting after semi-final may be long lasting if unknown schedules will be created there. The computer programme needs some time, too. To comply with 5G.1, the composition of unknown schedule can be completed earlier. It seems to be necessary to define the end of the last manoeuvre to avoid discussions, if flying time comes to an end.

Subcommitee	Yes	No	Abst.
Votes: 20	19	1	0

s) Annex 5G Unknown Manoeuvre Schedule … F3 Aero Subcommittee

Modify sub-paragraph 5G.3, with the additional text as shown below:

5G.3. Once an unknown schedule has been composed and checked for correctness **and the exact end of the last manoeuvre defined**, it must receive the final approval of the Jury and the contest director. Printed copies, showing the Aresti pictograms and manoeuvre lists, shall then be distributed to team managers, finalists, judges, jury members, and non-finalists who are scheduled to perform warm-up flights. A sufficient number shall be made available by the organisers for spectators.

Reason: If flying time may come to an end, it is useful to define when the last manoeuvre is over.

Subcommitee	Yes	No	Abst.
Votes: 18	18	0	0

Subcommittee Chairman's comment on r), s): This proposal avoids judges' discussions about end of last manoeuvre, especially if flight time is running out.

t) 5.1.13 Schedule of Manoeuvres F3 Aero Subcommittee

Amend introduction, delete obsolete schedule A-20; add new schedule A-25 as shown below:

~~For 2019-2020 Schedule A-20 is recommended to be flown in local competitions so as to offer advanced pilots a suitable way to achieve skills to step-up to P-21 Schedules.~~

For 2021-2023 Schedule A-23 is recommended to be flown in local competitions so as to offer advanced pilots a suitable way to achieve skills to step-up to P-23 Schedules.

For 2024-2025 Schedule A-25 is recommended to be flown in local competitions so as to offer advanced pilots a suitable way to achieve skills to step-up to P-Schedules.

~~For 2020-2021 Schedule P-21 will be flown in the preliminaries.~~

For 2022-2023 Schedule P-23 will be flown in the preliminaries.

For 2024-2025 Schedule P-25 will be flown in the preliminaries.

~~For 2020-2021 Schedule F-21 will be flown in the semi-finals, as well as in the finals, together with unknown schedules.~~

For 2022-2023, Schedule F-23 will be flown in the semi-finals, as well as in the finals, together with unknown schedules.

For 2024-2025, Schedule F-25 will be flown in the semi-finals, as well as in the finals, together with unknown schedules.

Advanced Schedule A-25 (2024-2025)	K-Factor
A-25.01 Triangle from Top with roll	K 3
A-25-02 Half Square Loop with half roll	K 2
A-25.03 Square Loop on corner with half roll, half roll	K 4
A-25.04 Figure Nine with half roll	K 3
A-25.05 Four consecutive Quarter Rolls	K 4
A-25.06 Stall Turn with half roll	K 3
A-25.07 Double Immelman with half roll, half roll, half roll	K 4
A-25.08 Humpty Bump with half roll	K 2
A-25.09 Half Roll, Loop, Half Roll	K 3
A25.10 Half Square Loop on Corner	K 2
A-25-11 Half Cloverleaf	K 5
A-25.12 Reverse Figure ET	K 3
A-25.13 Spin two turns	K 3
A-25.14 Top hat with half roll Option: Top hat with quarter roll, quarter roll	K 3
A-23.15 Figure Z with half roll	K 4
A-25.16 Comet	K 3
A-25.17 Figure S	K 3
	Total K = 54

Reason: F3A schedules change every two years.

u) 5.1.13 Schedule of Manoeuvres **F3 Aero Subcommittee**

Delete obsolete schedule P-21, add new schedule P-25:

PRELIMINARY SCHEDULE P-25 (2024-2025)	K-Factor
P-25.01 Triangle from Top with two quarter rolls, roll, two quarter rolls	K 3
P-25.02 Half Square Loop with roll	K 2
P-25.03 Square Loop on corner with half roll, half roll, half roll, half roll	K 5
P-23.04 Figure Nine with half roll	K 3
P-25.05 Roll Combination with three quarter rolls, three quarter rolls in opposite direction	K 4

P-25.06 Stall Turn with half roll	K 3
P-25.07 Double Immelman with roll, quarter roll, quarter roll, half roll.	K 4
P-25.08 Humpty Bump with two consecutive half rolls in opposite direction, half roll	K 3
P-25.09 Loop with two half rolls integrated.	K 5
P-25.10 Half Square Loop on Corner with half roll, half roll	K 2
P-25.11 Half Cloverleaf with half roll, half roll, half roll	K 5
P-25.12 Reverse Figure ET with half roll, two quarter rolls	K 4
P-25.13 Inverted Spin two turns, half roll	K 3
P-25.14 Top hat with two quarter rolls. Option: Top hat with quarter roll, quarter roll.	K 3
P-25.15 Figure Z with snap roll	K 4
P-25.16 Comet with two quarter rolls, roll	K 3
P-25.17 Figure S with quarter roll, quarter roll	K 5
	Total K = 61

Reason: F3A schedules change every two years.

v) 5.1.13 Schedule of Manoeuvres **F3 Aero Subcommittee**

Delete obsolete schedule F-21, add new schedule F-25:

Semifinal/Final Schedule F-25 (2024-2025)	K-Factor
F-25.01 Square Loop on Corner with quarter roll integrated, half roll integrated, half roll integrated, half roll integrated, quarter roll integrated	K 4
F-25.02 Figure Nine with roll, half roll in opposite directions	K 3
F-25.03 Roll Combination with consecutive two quarter rolls, four consecutive quarter rolls in opposite direction, two consecutive quarter rolls in opposite direction	K 4
F-25.04 Half Loop with half roll integrated	K 4
F-12.05 Pull Pull Push Humpty Bump with one and half snap rolls, half roll integrated, one and a half roll	K 5
F-25.06 Three Turn Spin with half roll	K 3
F-25.07 Horizontal Circle with three half rolls in opposite direction integrated	K 5
F-25.08 Shark Fin with roll, two snap rolls in oppposite directions	K 4
F-25.09 Square Vertical Eight with half roll, roll, quarter roll, roll, quarter roll, roll, half roll	K 5
F-25.10 Push Push Pull Humpty Bump with half roll, one and a half roll	K 3
F-25.11 Knife-edge Triangle with quarter roll integrated, half roll, half roll integrated, half roll, quarter roll integrated	K 5
F-25.12 Half Eight Sided Loop with quarter roll, quarter roll	K 3
F-25.13 Forty Five Degree Downline with two consecutive one and a quarter snap rolls in opposite direction.	K 4
F-25.14 Half Square Loop with roll, half roll in opposite direction	K 3
F-25.15 Avalanche (from top) with quarter roll integrated, snap roll, quarter roll integrated	K 6

F-25.16 Knife Edge Split S with quarter roll, quarter roll K 4
F-25.17 Stall Turn with half roll, three quarter rolls, snap roll, half roll. K 5
Total K = 70

Reason: F3A schedules change every two years.

w) Annex 5A – Aerobatic Description of Manoeuvres F3 Aero Subcommittee

*Delete the obsolete manoeuvre descriptions of schedules A-20, P-21, and F-21 and replace with descriptions of A-25, P-25 and F-25. Refer to Agenda **Annex 7b**.*

Reason: F3A schedules change every two years.

25 F3A schedules have been selected from more than one sequence. The finally proposed A-25, P-25, F25 are supported **by a clear majority of subcommittee members. (P-25 13/6, F-25 11/7/1 A-25 19**

F3M – R/C Large Aerobatic Aircraft

x) 5.10.11 Classification France

Amend sub-paragraph c) as shown below:

c) Final classification of the Classic Aerobatics will be done considering the sum of the scores of the two best normalized flights: known and unknown, multiplied by the following coefficients:
Known ..... ~~50%~~ **75%**
Unknown ..... ~~50%~~ **25%**
The highest combined scores will determine the winner. In case of ties, all the normalized flights of the contestant shall be used to determine the winner.

Reason: This rule gives priority to the mastery of the known program with the weight represented by the work done in preparation, the unknown program showing responsiveness as well as mastery of the pilot. Final classification of the Classic Aerobatics will be done considering the sum of the scores of the two best normalized flights: known and unknown, multiplied by the following coefficients.

Subcommitee	Yes	No	Abst.
Votes: 20	12	1	7

Subcommittee Chairman's comment on x): This proposal adapts F3M Classic Aerobatics to IMAC Classic Aerobatics.

F3P – R/C Indoor Aerobatic Aircraft

y) 5.9.13 Schedule of Manoeuvres F3 Aero Subcommittee

Delete the obsolete schedules AA-21, AP-21, AF-21, add new schedules AA-23, AP-23, AF-23:

Advanced Schedule AA-23 (2022-2023)

AA-23.01 Pyramid with quarter roll, quarter roll K 3
AA-23.02 Crossbox Top Hat with quarter roll, half roll, quarter roll K 3

AA-23.03 Loop with roll integrated K 5
AA-23.04 Shark Fin with half roll, half roll K 3
AA-23.05 Torque Roll K 4
AA-23.06 Half Hourglass K 3
AA-23.07 Rolling Circle K 5
AA-23.08 Figure ET with half roll K 3
AA-23.09 Crossbox Figure Z with quarter roll, half roll quarter roll K 4
AA-23.10 Stall Turn with quarter roll, quarter roll K 3
AA-23.11 Square Loop with quarter roll, quarter roll K 4

Total K = 40

Preliminary Schedule AP-23 (2022-2023)

AP-23.01 Pyramid with quarter roll, half roll integrated, quarter roll K 3
AP-23.02 Crossbox Top Hat with half roll, half roll, half roll K 3
AP-23.03 Loop with half roll integrated, half roll in opposite direction integrated K 5
AP-23.04 Shark Fin with quarter roll, half roll, quarter roll K 3
AP-23.05 Three quarter Torque Roll, Upline, three quarter Torque Roll in opposite direction K 4
AP-23.06 Half Hourglass with two consecutive ¼ rolls, roll, half roll K 4
AP-23.07 Rolling Circle with two rolls in opposite directions K 5
AP-23.08 Figure ET with quarter roll, quarter roll K 3
AP-23.09 Crossbox Figure Z with quarter roll, four consecutive one eighth rolls, quarter roll K 5
AP-23.10 Stall Turn with three quarter roll, quarter roll K 3
AP-23.11 Square Loop with quarter roll, quarter roll, quarter roll, quarter roll K 5

Total K = 43

FINAL SCHEDULE AF-23 (2022-2023)

AF-23.01 Square Loop with half roll, quarter roll, two consecutive quarter rolls, quarter roll K 4
AF-23.02 Double Stall Turn with half roll, half roll, half roll K 3
AF-23.03 Double Humpty Bump with quarter roll, half roll integrated, quarter roll, quarter roll half roll integrated, quarter roll K 5
AF-23.04 Half Square Loop with four consecutive one quarter torque rolls K 4
AF-23.05 Loop Crossbox Circle Combination with half roll integrated, half roll integrated, half roll integrated, half roll integrated K 6
AF-23.06 Half Loop with two consecutive quarter rolls in opposite direction integrated K 4
AF-23.07 Crossbox Top Hat with quarter roll, two consecutive one eight rolls, two consecutive one eight rolls in opposite direction,

quarter roll. K 4

AF-23.08 Corner Combination with half roll integrated, quarter roll, half roll integrated K 3

AF-23.09 Triangle with quarter roll, half roll integrated, quarter roll K 5

AF-23.10 Reverse Shark Fin from Top with quarter roll, half roll, quarter roll K 4

AF-23.11 Triangle Crossbox Square Combination with quarter roll, three consecutive one eighth rolls, half roll, three consecutive one eighth rolls, quarter roll K 6

Total K = 48

Reason: F3P Aerobatic schedules change every two years.

z) Annex 5M – Indoor Aerobatic Description of Manoeuvres

F3 Aero Subcommittee

*Delete the obsolete manoeuvre descriptions of schedules AA-21, AP-21, and AF-21 and replace with descriptions of AA-23, AP-23 and AF-23. Refer to Agenda **Annex 7c**.*

Reason: F3P schedules change every two years.

Subcommitee	Yes	No	Abst.
Votes: 18	17	0	1

CIAM F3 RC Aerobatics Subcommittee

Thank you all for attention and cooperation.

Special thanks to Antonis!

Let‘s hope that Covid 19 situation will improve all over the world, soon,

- **<u>that we can meet in person again</u>,**
- **<u>that we can do our sport without restrictions.</u>**

Peter Uhlig