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**503.1. General**

IAC, through its Letter of Agreement with the National Aeronautic Association, is responsible for the U.S. National Aerobatic Championships.

**503.2. Policy**

**503.2.1. Supplemental Policies**

503.2.1.1. As stated in IAC Policy and Procedures Manual, Section 501, the IAC Board of Directors shall approve the Contest Director and the budget for the U.S. National Aerobatic Championships.

503.2.1.2. The IAC Sanctions Committee shall approve any supplementary rules or waivers to the *IAC Official Contest Rules* for all IAC Championship events, including the U.S. National Aerobatic Championships.

**503.2.2. Participation**

503.2.2.1. Entry is open to all IAC members or members of other National Airports Controls (NAC's). The Primary category, although not a "National Championship" category, may be flown if there are at least two entrants.

503.2.2.2. Pilots must pre-register before being assigned a practice slot. Refunds will be given if the competitor is unable to attend.

**503.2.3. National Titles and Awards**

503.2.3.1. U.S. National titles, trophies, and special awards will only be awarded to pilots of U.S. citizenship. Individual Flight Medals are not restricted by citizenship. This does not preclude the creation and awarding of special trophies specifically for non-U.S. citizen competitors at the U.S. Nationals.

503.2.3.2. The following championship titles will be awarded:

- (a) U.S. Sportsman Aerobatic Champion
- (b) U.S. Intermediate Aerobatic Champion
- (c) U.S. Advanced Aerobatic Champion



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- (d) U.S. National Aerobatic Champion (Unlimited category)
  - (e) U.S. Sportsman Glider Aerobatic Champion
  - (f) U.S. Intermediate Glider Aerobatic Champion
  - (g) U.S. Advanced Glider Aerobatic Champion
  - (h) U.S. National Glider Aerobatic Champion (Unlimited category)

503.2.3.3. In the event the U.S. National Glider Aerobatic Championships is flown at a location other than the U.S. National Aerobatic Championships, as determined by the IAC Board of Directors, the “U.S. National Glider Aerobatic Champion” titles will be awarded at that competition.

503.2.3.4. The scores for a competitor at the U.S. Nationals who is participating in the Regional Championship series may be used as a "wildcard" in the Regional Championship Series. If the competitor is competing in more than one Region, the scores may be used in all of the regions in which a competitor is participating.

### 503.3. Championship Administration

503.3.1. The Contest Director will schedule a general briefing for all pilots and judges at the beginning of the Championship. This briefing will include:

- (a) General contest information and schedule
- (b) All information required in Chapter 4 of the *IAC Official Contest Rules* except for information specific to individual flight programs, will be briefed at the flight program briefings conducted by the Chief Judge, or their designee, of the category.
- (c) Drawing for order of flight for the Known for each category: The order of flight will be generated by computer or by competitor-drawn lottery for each flight program, except if otherwise provided herein. The order of flight for all scheduled flight programs may also be drawn at this time.

### 503.3.2. Selection of Judges

The process for judge selection shall be as set forth in IAC Policy and Procedures Manual, Section 501.4.



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**503.3.3. U.S. Team Selection**

IAC policy regarding the selection of pilot members of the U.S. Aerobatic Teams can be found in IAC Policy and Procedures Manual, Section 504, "Selection of U.S. Aerobatic Team". This policy must be followed by Contest Directors when setting up the competition schedule of events.

**503.3.4. Contest Director's Handbook**

The *Contest Director's Handbook* will be updated by the Contest Director every year. All Contest Directors are expected to keep this book, which includes extensive checklists, updated and to return it to IAC Headquarters following the Championships and before the Fall IAC Board of Directors meeting.

**503.3.5. Post-Contest Reports**

The following officials are required to submit reports covering their areas of responsibility to the IAC Board of Directors at the board meeting that immediately follows the conclusion of the U.S. National Aerobatic Championships:

- (a) Contest Director
- (b) Jury Chair
- (c) Chief Judge of each Category

**503.4. Flight Programs**

**503.4.1. General**

- 503.4.1.1. All flight programs as defined in the *IAC Official Contest Rules* will be scheduled. If flight programs in addition to those called for in the *IAC Official Contest Rules* are scheduled, then these extra flight programs will be sacrificed first in the event of weather delays and cancellations. Generally, no category will be given preference. In the event of weather issues, the contest officials will make every effort to see that all categories are treated equally. However, the overall first priority of the U.S. Nationals is to select the U.S. National Champion (Unlimited category); second, the U.S. National Champion in all other categories; and third, to select the U.S. Aerobatic Team(s). The Contest Director, with approval from the Contest Jury, may change the



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order of contest categories, if required to meet these contest priorities. Regardless, the first program scheduled will be the Known for the Team selection category. The order of flight programs for each category will be scheduled in the following order:

- (a) Known
- (b) Free
- (c) Unknown (Free Unknown I for Advanced and Unlimited power categories)
- (d) Free Unknown II (flown by team aspirants only)
- (e) The Four Minute Freestyle Event will be the last program scheduled to fly at the Championship (i.e., only after all other category flight programs have been flown).

503.4.1.2. Warm-up flights are encouraged and may be scheduled for all programs in each category, if time and pilot resources allow. The warm-up pilot will not be a competitor in the category being flown.

503.4.1.3. In order to be named the “U.S. National Aerobatic Champion” (Unlimited category) or the “U.S. Advanced Aerobatic Champion”, competitors will be required to fly the Known, Free, and Free Unknown I programs. The Four Minute Freestyle is a separate trophy event and not counted toward the National Champion titles. The Free Unknown II is flown only by team aspirants and is not counted toward the titles.

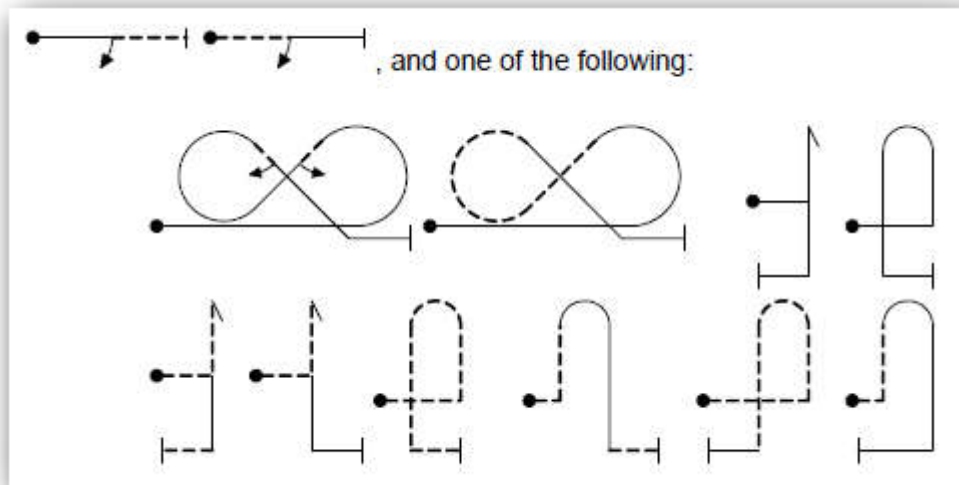
**503.4.2. Optional Safety and Practice Maneuvers**

503.4.2.1. At each Team Selection flight program briefing, the Chief Judge shall inform competitors whether or not Optional Safety and Practice Maneuvers may be flown. Optional Safety and Practice Maneuvers shall be permitted unless the Contest Director elects otherwise because of time restrictions. The option to fly such maneuvers shall never be added or withdrawn once a flight program is underway.

503.4.2.2. If Optional Safety and Practice Maneuvers are permitted and a pilot chooses to fly them, he or she must do so before signaling (“wing-dipping”) at the start of the competition flight.



- 503.4.2.3. If flown, these figures may only be flown once, in any order unless a figure starting inverted is used (see below), and continuously on the same axis. They must be flown inside the aerobatic box. If these Optional Safety Maneuvers are flown but not in the prescribed manner, the competitor will receive a penalty of 30 points. Should any of the safety maneuvers be flown below the minimum altitude for the category flying, as determined by a simple majority of the judges, the competitor will receive a LOW penalty in accordance with IAC rules.



- 503.4.2.4. When flown, a figure from Family 5 or 8 that starts inverted shall be inserted after the first half roll. In that case, if the figure is one that finishes positive, the second half roll is not flown.

**503.4.3. Free Unknown Programs for Advanced and Unlimited Power Categories**

- 503.4.3.1. For the Advanced and Unlimited (Power) categories, a “Free Unknown I Program Figure Submission” meeting will be scheduled to occur after the conclusion of the Known Program for that category and preliminary scores are available.

Additionally, a “Free Unknown II Program Figure Submission” meeting for U.S. Team selection aspirants will be scheduled to occur after the conclusion of all contest flying on the day the Free Unknown I program in that category has been completed. Free Unknown programs for the Advanced and Unlimited (Power) categories will be drawn



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by the competitors using the procedures described below. Unknown Programs for all glider and other power categories will be supplied to the Contest Director by IAC Headquarters. Each figure submission meeting will be attended by a quorum of the Contest Jury.

- 503.4.3.2. The top ten (10) competitors flying in the program, in rank order of the Known results (figure selection for Free Unknown I) or the provisional accumulated results (figure selection for Free Unknown II), will be invited to submit one Unknown figure. Only competitors attending the program's figure submission meeting are eligible to submit a figure.
- 503.4.3.3. If fewer than ten (10) competitors are eligible to submit a figure, additional figures will be selected by the Jury until a total of 10 figures have been submitted or selected.
- 503.4.3.4. Free Unknown figures must be chosen from the *IAC Official Contest Rules*, Appendix 3 (Power) with the intent of composing Unknown programs in identical fashion as in CIVA regulations (Note: The *IAC Official Contest Rules* Appendix 3 figures are identical to those for Unknown programs for CIVA regulations.) There is no maximum total program K-factor limit for Free Unknown programs. Submitted figures will be subject to the figure K-factor limits listed in Table 1 below. Additionally, Free Unknown programs will be subject to the family limitations listed in Table 2 below. Repetition of any catalog number-is not allowed within a flight program. A catalog number used in Free Unknown I may be used in Free Unknown II, but repetition of a complete figure from Free Unknown I is not allowed in Free Unknown II. A submitted figure will only be accepted after the Contest Jury has determined that the figure is legal for Unknowns in the category.



**Table 1: Unknown Figure K-factor Limits**

Category	Program	Minimum K	Maximum K
Advanced	Free Unknown I	15	30
	Free Unknown II (1)	15	35
Unlimited	Free Unknown I & II (1)	22	No limit

Notes: (1) Free Unknown II is only flown by Team Selection Categories

**Table 2: Power Unknown Figure Family Limitations**

Family	Advanced	Unlimited
1.1.6 to 1.1.11		Maximum of two from columns 3 and 4
1.2.3, 1.2.4	Maximum of one only from columns 3 and 4	
7.8.1 to 7.8.8	Maximum of one figure only	
8.4.1 to 8.4.4 8.4.15 to 8.4.18 8.5.1, 8.5.2, 8.6.1, 8.6.2		Maximum of two from columns 3 and 4
9.9	Minimum of two and maximum of four (1)	Maximum of four (1), (2)
9.10	None allowed	Maximum of four (1), (2)
9.11 to 9.12	Maximum of one figure	

Notes: (1) No more than one snap roll (Family 9.9 or 9.10) per figure  
 (2) Total number of figures from 9.9 to 9.10 not to exceed six, at least one of which must be vertically climbing.

503.4.3.5. The Contest Jury shall publish an official list of figures selected by the pilots as soon as possible after the Figure Submission meeting. The list will be definitive.





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- 503.4.3.6. Any pilot or group of pilots flying this Flight Program may submit to the Contest Jury not more than one Free Unknown Program composed of those 10 figures. Each figure may begin on either axis, regardless of how it was drawn by the submitter.
- 503.4.3.7. At least one linking figure, up to a maximum of four, must be included in each sequence. These linking figures may contain repetitions despite the provisions of section 503.4.3.4. The K factors of the linking figure(s) shall be modified so that they share equally an aggregate of 24K. Sequences will consist of no more than 14 figures.
- 503.4.3.8. Sequence proposals must be submitted via Visio or OpenAero computer file. In addition, if using OpenAero, the use of the Free Unknown Designer (FUD) is required. At a minimum, a Form B must be submitted with a list of figures, their Catalog numbers and K-factors, and each linking figure identified. The Contest Director shall determine the deadline for submitting proposed sequences.
- 503.4.3.9. All proposed sequences must be checked by the Contest Jury for legality and, if necessary, corrected by the submitter and re-checked by the Jury at least 14 hours before the start of the Free Unknown flight program. Any proposed sequence that the Jury determines is illegal after the submitter has been afforded an opportunity to correct it shall not be flown.
- 503.4.3.10. After sequence submission, the Contest Jury shall identify each sequence with a unique letter (e.g., A, B, C, etc.) and publish the Form B with a list of figures.
- 503.4.3.11. At least 12 hours before the start of this Flight Program, each competitor will notify the Contest Director as to which of the proposed sequences he/she will fly.
- 503.4.3.12. At least one (1) hour before the start of the Flight Program, the Contest Director shall post a list of the Free Unknown Programs chosen by each competing pilot.
- 503.4.3.13. Sequence choices will be confirmed during the pilot roll call in the briefing before the flight. The Chief Judge will verify by radio with the competitor the sequence to be flown. This should be part of the clearance into the box, e.g., from Chief Judge -- "(Pilot Name), you are cleared into the box and confirm sequence B", Competitor -- "Chief Judge, (Pilot Name) cleared into the box and confirm sequence B."





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**503.4.4. The Four Minute Freestyle Event**

503.4.4.1. The Four Minute Freestyle will be conducted as a separate trophy event, as outlined in the *IAC Official Contest Rules*.

503.4.4.2. Competitors eligible to participate in the Four Minute Freestyle Event are, in order of preference:

(a) Unlimited Power and Glider Category competitors, in rank percentile order of standing after all compulsory competition flights; then

(b) Advanced Power and Glider Category competitors who meet the requirements of IAC rule 5.6.1, in rank percentile order of standing after all compulsory competition flights.

(c) Pilots who wish to enter the Four Minute Freestyle Event only, who have not competed in the Championships: Permission to enter this Event will be granted by agreement between the Contest Director and Contest Jury after review of the competitor's qualifications.

503.4.4.3. The top 10 eligible competitors will be invited to participate in the Four Minute Freestyle flight. Should any of those competitors decline to participate, the next highest ranked eligible pilots will be invited, until there are 10 competitors or all eligible pilots have been invited.

503.4.4.4. If sufficient time allows, and with the concurrence of the Contest Director, the Contest Jury may allow up to five additional competitors to fly the Four Minute Freestyle Event.

503.4.4.5. The order of flight for the Four Minute Freestyle Event will be a random order generated by computer.

**503.4.5 Zero Marks**

503.4.5.1. The judge must summarize the reasons for applying any type of zero in the Remarks column of the Form A.

503.4.5.2. Judges will mark three types of zeros based on the reason for giving the zero:



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(a) Numeric Zeros. The figure is basically correct, but contains sufficient errors that cause the grade to fall to zero by accumulation of downgrading points (See IAC Rule 7.3.2). The numeric zero is annotated on the Form A with the mark "0.0" and is included in the final score calculations as any nonzero mark would be.

(b) Hard zeros (See IAC Rule 7.3.1) are given when a Judge perceives that the pilot has failed to meet a relevant criteria for a maneuver that is not simply an instance of point deductions due to poor execution (Examples: Flying the wrong figure or a figure in the wrong direction on the X axis). The Hard Zero is annotated on the Form A with the mark "HZ".

After each flight is complete, scoresheets shall be reviewed by the Chief Judge or his Assistant for HZ marks. If HZ marks are the majority, and no judges' conference is requested, the Chief Judge or his Assistant shall mark the 'CHZ' box on the Chief Judge Penalty Form for the figure(s) so marked.

(c) A mark of "Perception Zero" (PZ) must be given if the Judge considers that the figure is incorrectly flown in respect of a criterion that is a matter of subjective perception, rather than clearly demonstrable fact. There are four, and only four, judgements that require a PZ mark:

- (1) A snap roll does not autorotate
- (2) A spin does not autorotate
- (3) A snap roll is observed within a rolling turn
- (4) A tail slide did not move backwards by the required amount

#### **503.4.6. Judges Conferences**

503.4.6.1. When difficulties occur in interpreting the correct application of an HZ mark, the Chief Judge, or any grading judge, may call for a conference with the panel of Judges. The conference may include a video review of the figure(s) in question, if applicable. Numeric and Perception Zeros may not be conferenced or reviewed on video. A conference is not necessarily warranted every time a mixture of numeric, PZ and HZ marks are given, and a conference should only be called for when there is a compelling doubt on matters-of-fact. Figures consisting of unanimous zeros (HZs, PZs, or 0.0's) or a mix of zeros and Averages only, shall not be conferenced. If possible, any conference



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should be held at the next possible break such that the issue may be discussed without any pilot holding in the air or with the engine running on the ground.

- 503.4.6.2. Should a conferenced HZ mark be confirmed as correct, the Chief Judge will check the 'CHZ' box on the "Chief Judge Penalty Form" for the figure in question. No other action by the individual judges is required.
- 503.4.6.3. Should a conferenced HZ mark be confirmed as incorrect, the Chief Judge shall leave the 'CHZ' box unchecked. No other action by the individual judges is required.
- 503.4.6.4. The Conference Average ('C') mark shall not be used at U.S. Nationals.

### **503.5. Protests and Use of Video**

- 503.5.1. At a minimum, video recordings will be made of all flight programs in power team selection competitions. This can be extended to other categories at the discretion of the Contest Director. The cost of the video recordings will be paid entirely from entry fees. Entry fees will be raised as necessary to cover this cost. All videos will be sent to IAC Headquarters after the competition results are official.
- 503.5.2. The contest organizers, with assistance from IAC Headquarters, are responsible for acquiring the services of qualified videographers with quality equipment, and providing a shaded viewing area on each judging line location with a monitor or monitors of adequate size to allow clear viewing by the number of judges expected. Although not required, it is recommended that the video service be requested to use a frame-indexed playback machine to allow easy forwarding within a sequence to the figure in question. The contest organizers will also create a volunteer position, to be staffed by an IAC member with judging credentials (no requirement to be on the current judges list) whose job it will be to:
  - (a) Educate (if necessary) the video crew on basic techniques necessary for videotaping aerobatic flight (e.g., not to pan the camera during the slide portion of a tail slide or zoom in too close);
  - (b) Assist the camera operator with tracking the aircraft by foreshadowing the expected aircraft track (up, down, left, right); and



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(c) Alert the video crew to potential zero grades so that an index of the suspect figure may be noted.

- 503.5.3. All videos will be considered official and can be used by the panel of Judges when there is disagreement over HZ marks and by the Contest Jury to assist in the resolution of protests.
- 503.5.4. When difficulties occur in interpreting the correct application of an HZ mark, the Chief Judge may call for a conference in accordance with the procedures outlined in Section 503.4.6.
- 503.5.5. The official video shall be available only to the panel of Judges, including the Chief Judge, during a conference and to members of the Contest Jury during a Jury proceeding to resolve a protest.
- 503.5.6. Any judge may request to review the video, including the Chief Judge. The Chief Judge will supervise the use of video for review. Video review may be used to help determine *matters of fact*, but not *matters of perception*. Examples of matters of fact are:
- (a) The extent of rotation in a spin (1¼ vs. 1¾, etc.)
  - (b) The direction of multiple rotational elements (opposite or same direction)
  - (c) The direction or number of rolls in a rolling turn,
  - (d) The character of snap rolls (positive or negative),
  - (e) The omission or addition of a figure element (i.e., missing or added hesitation), etc.
- 503.5.7. Under no circumstances will video be used for conferences or an individual judge's review for issues concerning PZ's or numeric (0.0) zero marks. Reference Section 503.4.5. for details on the proper application of zero marks.
- 503.5.8. The benefit of the doubt must always fall to the competitor. When the Chief Judge determines that the time is right to review the video, only the Chief Judge, grading Judges, and members of the Contest Jury will be allowed to review the video. For each request for video review, the following procedure will be administered by the Chief Judge and monitored by a member of the Contest Jury. The Chief Judge will:



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- (a) Determine what specific issue is being challenged, consulting with the requesting Judge, if necessary, and then make a determination if the issue is clearly a matter of fact.
  - (b) If the issue is clearly a *matter of fact*, inform the panel of Judges what factual issue is specifically being reviewed, remind the Judges that there is to be no discussion among the Judges regarding the quality of the figure or grades given for any pilot on any maneuver.
  - (c) Instruct the videographer to play the video of the maneuver in question and ensure that there is in fact no discussion or debate among the grading judges while viewing the video.
  - (d) After each Judge has reviewed the video of the maneuver in question, the Chief Judge will conduct a conference and take action in accordance with Section 503.4.6.

**503.5.9. Protests**

The video may be viewed by the competitor, under the supervision of the Contest Jury, only after filing a protest. Only the figure(s) under protest may be viewed. The Jury Chair shall:

- (a) Take reasonable steps to shield the identity of the pilot being viewed on video from the members of the jury.
- (b) Additionally, in the case of a protest involving an HZ, the Jury members shall not be given the original zero/nonzero marks from the judging line. The purpose of both steps is to minimize any perception of bias by members of the Jury.