



Academy of Model Aeronautics

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PROPOSAL NO. _____
(To be inserted by Headquarters)

POSTMARK/RECEIVED DATE _____
(To be inserted by Headquarters)

RULES CHANGE PROPOSAL FORM

Send to AMA Headquarters. (Attach extra sheets if necessary) The current issue of Competition Regulations must be used to reference rules.

Please Print

PROPOSAL TYPE (Check One): Basic Cross (Indicate Original Proposal Number) _____

Urgent/Safety/Emergency Interpretation

-
- General Section Executive Council Outdoor Free Flight Indoor Free Flight CL Speed
 CL Racing CL Navy Carrier CL Aerobatics CL Combat CL Special Events RC Aerobatics
 RC Scale Aerobatics RC Pylon Racing RC Helicopter RC Soaring Scale Electric
 Special Events RC Combat

Brief summary of the proposed change.

This proposed change brings the current rules up to date by including language that provides for 45 degree lines within Hammerheads that are now legal maneuvers in scale aerobatic sequences.

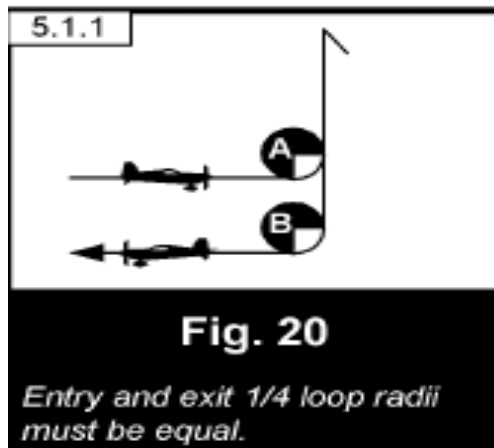
Exact wording proposed for the rule book. (List paragraph numbers where applicable. Example: Change “quote present rule book wording” to “exact wording required”. Attach additional sheet if needed.

Change:

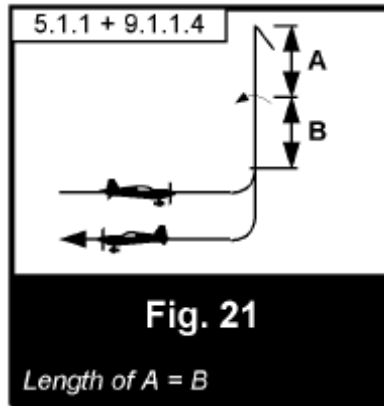
- SCA page 16 section 8.5

8.5: Family 5: Hammerheads. Hammerheads, also referred to as stall turns, are some of the most graceful figures in the FAI “Aresti System (Condensed)”. In its most basic form, the figure begins when the aircraft leaves horizontal flight and flies a quarter loop to establish a vertical climb. At the top of the vertical line, the aircraft stops, pivots and establishes a vertical descent, with the figure ending as the aircraft is returned to horizontal flight. The judging criteria are:

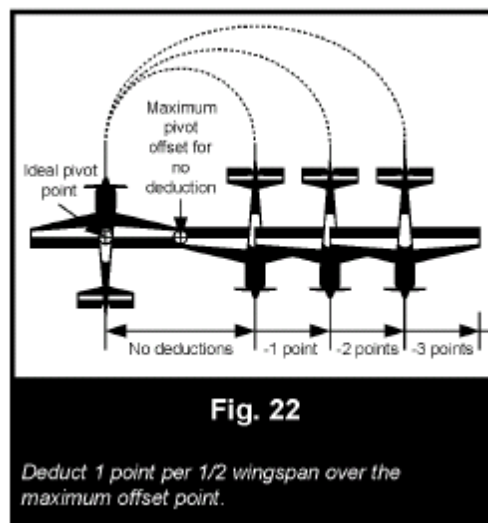
a: The entry and exit quarter loop radii must be equal (Fig. 20).



- b:** The vertical lines, both up & down, must be wind corrected so that they appear to the judge's eye as a straight line perpendicular to the horizon.
- c:** Any deviation from the vertical line, either up or down, will result in a deduction of 0.5 points per 5 degrees.
- d:** Any added roll(s) must be in the vertical climb or vertical descent and positioned so that the liens before and after the roll(s) are of equal length (Fig. 21).



- e:** The length of the vertical up and down lines need not be equal. As such, the altitude of the lines at the start and finish of the hammerhead may be different.
- f:** As the aircraft nears the point where it would stop climbing, it must pivot in a plane parallel to vertical.
- g:** When the aircraft pivots at the top of the line in a stall or near stalled condition, no deduction should be applied for wind drift during that particular time.
- h:** In the case of strong cross winds, the aircraft will most probably be “crabbing” to wind correct the up and down line. The pivot at the top of the line might therefore be less or more than 180 degrees and no downgrade should be applied to it.
- i:** Any pendulum movement observed after the pivot is subject to downgrade using the 0.5 points per degrees rule. Ideally, the aircraft pivots around its center of gravity. To avoid a deduction, the aircraft must pivot around an axis point, which cannot be farther away from its center of gravity than its wingtips (1/2 wingspan). The downgrade for this deviation is one (1) point per half wingspan that the point of rotation exceeds the maximum allowed (Fig. 22). Judges must be careful to deduct only



for true extended turnaround, and not for any apparent deviation caused by wind drift during the pivot. One way to recognize a “fly-over” from a wind drift will be that they “fly-over” is generally characterized by the continuation of vertical movement and a pivot larger than 4 wingspans. A “fly-over” hammerhead should be zeroed (Fig 23). The maneuver should also be zeroed if any distinctive backward sliding movement is observed before the start of the pivot, even if the rotation is correctly performed after the slide (Fig. 24). The rate at which the aircraft pivots around its vertical axis is not a judging criterion. The wings must remain in the vertical geometric plane throughout the turnaround, and the aircraft’s attitude before and after the turnaround must be absolutely vertical (unless wind correction is required), with no extraneous tail movement. There must be no rotation around the pitch or roll axis. If there is movement around any axis other than the yaw axis, often referred as “torquing” (Fig. 25), there is a deduction of 0.5 points per 5 degrees of axis.

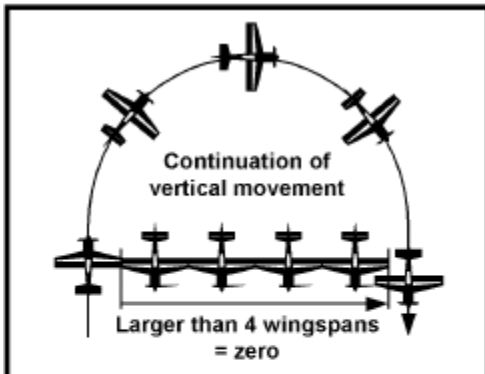


Fig. 23

'Fly-over' are characterized by the continuation of vertical movement and a pivot larger than 4 wingspans.

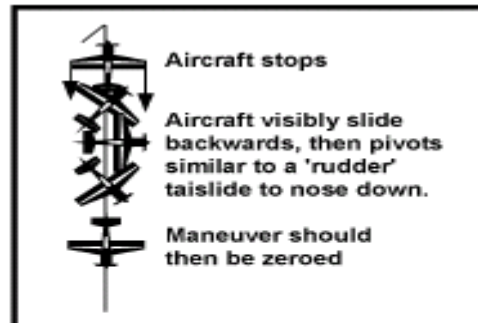


Fig. 24

Any clearly visible downward slide before the pivot starts will zero the maneuver.

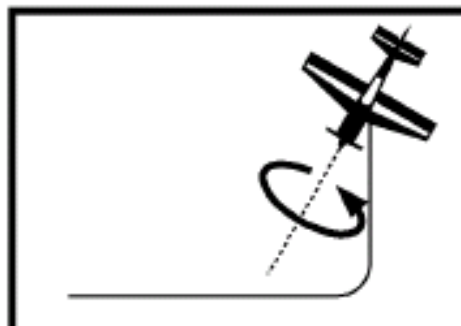


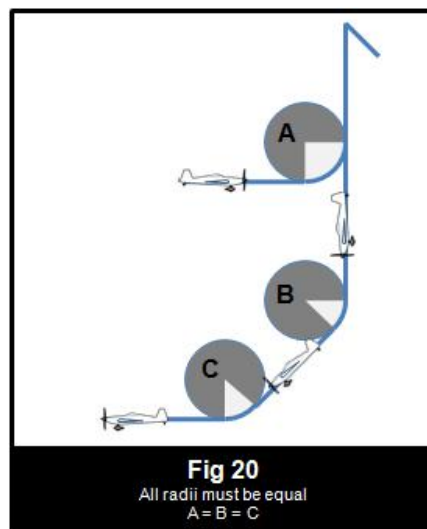
Fig. 25

'Torquing' is a rotation around the roll axis during the turnaround.

Change to:

8.5: Family 5: Hammerheads.

Hammerheads, also referred to as stall turns, are some of the most graceful figures in the FAI “Aresti System (Condensed)”. In its most basic form, the figure begins when the aircraft leaves horizontal flight and flies a **one-quarter loop** to establish a vertical climb **or flies a one-eighth loop** to establish a 45 degree up line. If the entry is a one-eighth loop to a 45 degree line then, having presented that line, the aircraft will fly another one-eighth loop and establish a vertical up line. At the top of the vertical line, the aircraft stops, pivots and establishes a vertical descent. The vertical line may terminate in a **one-quarter loop** which will return the aircraft to horizontal flight and end the figure. Or, after the vertical descent from the peak, the aircraft may fly a one-eighth loop to a 45 degree down line. Having presented this line, the aircraft will fly another one-eighth loop to return to horizontal flight thus ending the figure (Fig 20)



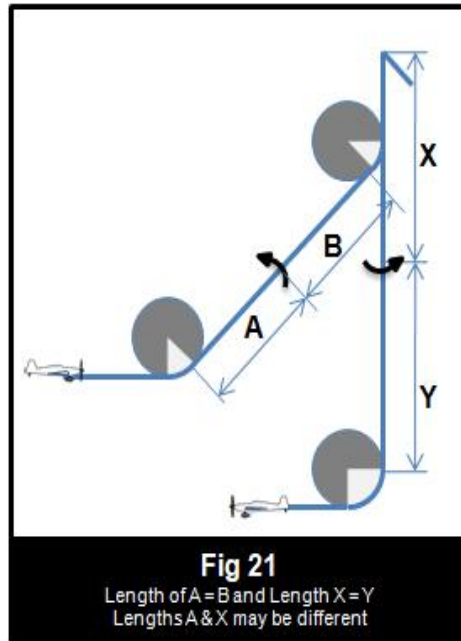
The judging criteria are:

a: The radii of all part loops within the figure must be the same. The standard for comparison is the radius of the first part loop flown within the figure.

b: The up and down lines, vertical or 45 degree, must be wind corrected so that they appear to the judge’s eye as a straight line flown at the correct angle to the horizon.

c: On the up and down lines, any roll deviation, or deviation of the track of the aircraft in pitch or yaw will result in a deduction of 0.5 points per 5 degrees of deviation.

d: Any added roll element(s) on the vertical or 45 degree lines must be positioned so that the line segments before and after the roll elements are of equal length (Fig 21).



e: The length of the up and down lines, **vertical or 45 degree**, need not be equal. **Therefore**, the altitude of the horizontal lines at the **entry and exit** of the hammerhead may be different and no downgrade applies for this difference.

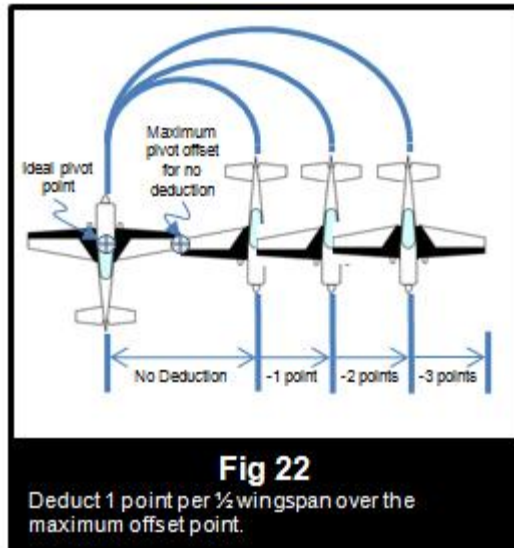
f: As the aircraft nears the point where it stops climbing, it must pivot in a plane parallel to vertical. **Any alignment deviation from parallel to the vertical should be downgraded .5 pts for each 5 degrees of deviation.**

g: When the aircraft pivots at the top of the **vertical** line in a stalled or near stalled condition, no deduction should be applied for wind drift during that particular time.

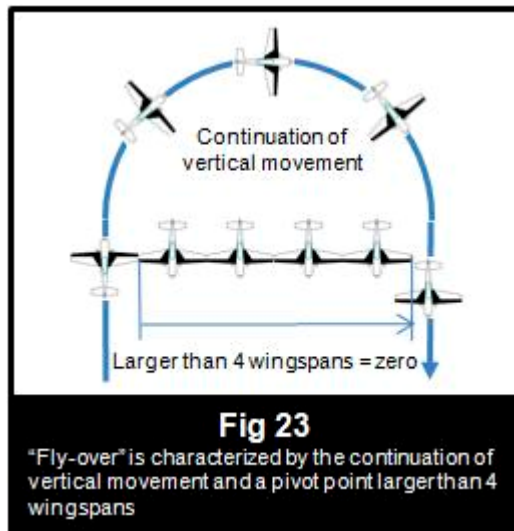
h: In the case of strong cross winds, the aircraft will most probably be “crabbing” to wind correct the up and down lines. The pivot at the top of the line might therefore be less or more than 180 degrees and no downgrade should be applied to it.

i: Any pendulum movement observed after the pivot is subject to downgrade **at .5 points per 5 degrees of movement off the vertical. This downgrade is applied for each movement either side of the vertical.**

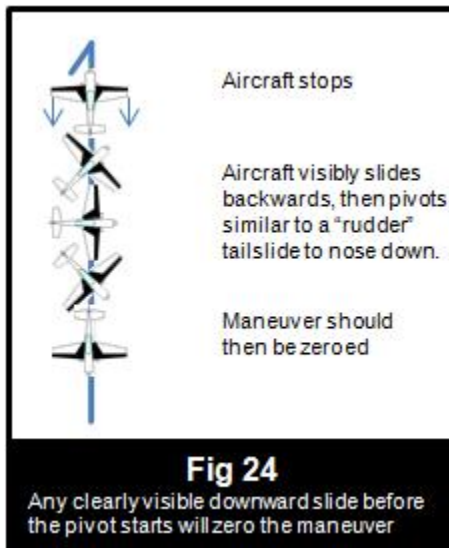
When rotating at the top of the maneuver, ideally, the aircraft pivots around its center of gravity. To avoid a deduction, the aircraft must pivot around an axis point, which cannot be farther away from its center of gravity **on the vertical up line** than its wingtip (1/2 wingspan). The downgrade for this deviation is one (1) point per half wingspan that the point of rotation exceeds the maximum allowed (Fig 22)



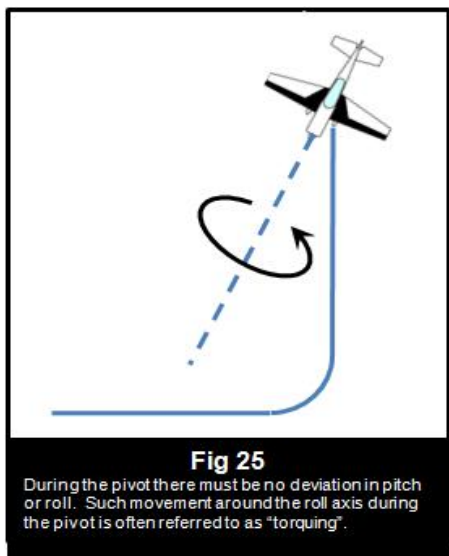
Judges must be careful to deduct only for true extended turnaround, and not for any apparent deviation caused by wind drift during the pivot. One way to recognize a “fly-over” from a wind drift will be that the “fly-over” is generally characterized by the continuation of vertical movement and a pivot larger than 4 wingspans. A “fly-over” hammerhead should be zeroed (Fig 23).



The maneuver should also be zeroed if any distinctive backward sliding movement is observed before the start of the pivot, even if the rotation is correctly performed after the slide (Fig. 24).



The rate at which the aircraft pivots around its vertical axis is not a judging criterion. During the pivot, the wings must remain in the vertical geometric plane as dictated by the Aresti. This alignment must be maintained throughout the pivot, and the aircraft's attitude at the beginning and the ending of the pivot must be absolutely vertical. During the pivot there must be no deviation in pitch or roll. Any pitch and roll deviation observed during the pivot should be downgraded at .5 pts for each 5 degrees of deviation. Such movement around the roll axis during the pivot is often referred to as "torquing" (Fig 25).



Logic behind proposed change, including alleged shortcomings of the present rules. State intent for future reference.


This change recognizes the new 45 degree lines that the IAC has been flying for two years and so it simply brings the IMAC catalog into line with IAC current practice

New event test data/information (new events only), please provide what testing of this new event has taken place to include number of participants and number of contests.


N/A

Note: The Contest Board Chairman may, in coordination with the submitter of the proposal, at any time prior to submitting a proposal to the Contest Board for Final Vote, edit proposal wording to increase clarity and to avoid ambiguity provided the proposal intent is not changed. **Signatures of one Contest Director and two Open class members are required.**

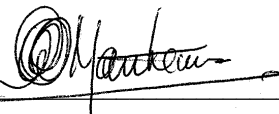
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Date of Signature Jan, 4, 2009  _____ Membership Status CD Open

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Date of Signature Jan 4, 2009  _____ Membership Status CD Open

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Date of Signature Jan 4, 2009  _____ Membership Status CD Open