Flying & Judging

IMAC
INTERNATIONAL MINIATURE AEROBATIC CLUB, INC.

MANEUVERS DRAWINGS
WITH INSTRUCTIONS

"Mind the Basics"

In loving memory of John Schroder

www.flyIMAC.org

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PLANE POSITIONS

ENTRY

EXIT

ROTATIONAL ELEMENT

LOOP or RADII

A = B

CENTERING

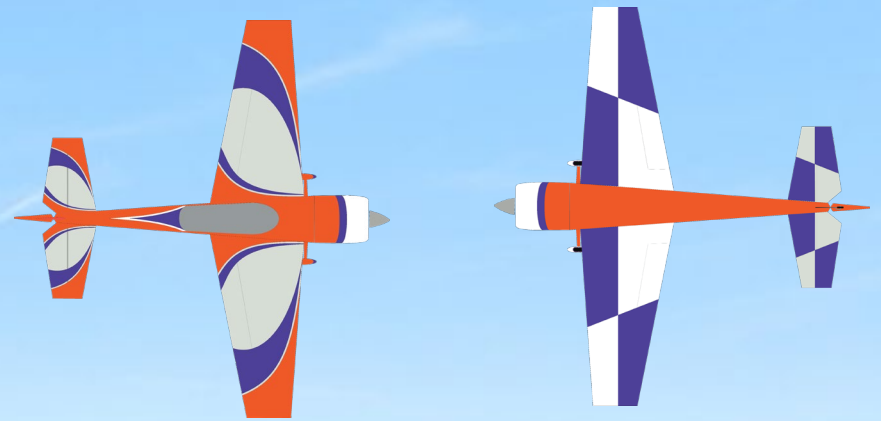
Horizontal line establishment

STRAIGHT AND LEVEL

UPRIGHT OR INVERTED

KNIFE EDGE

TOP OR BOTTOM



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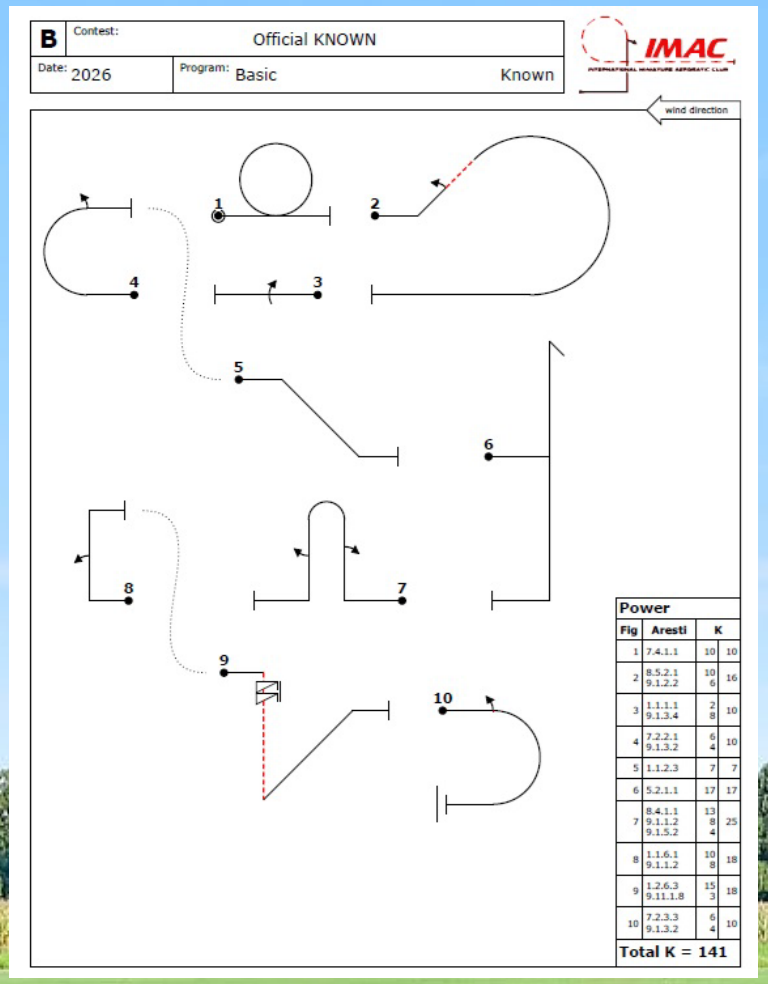
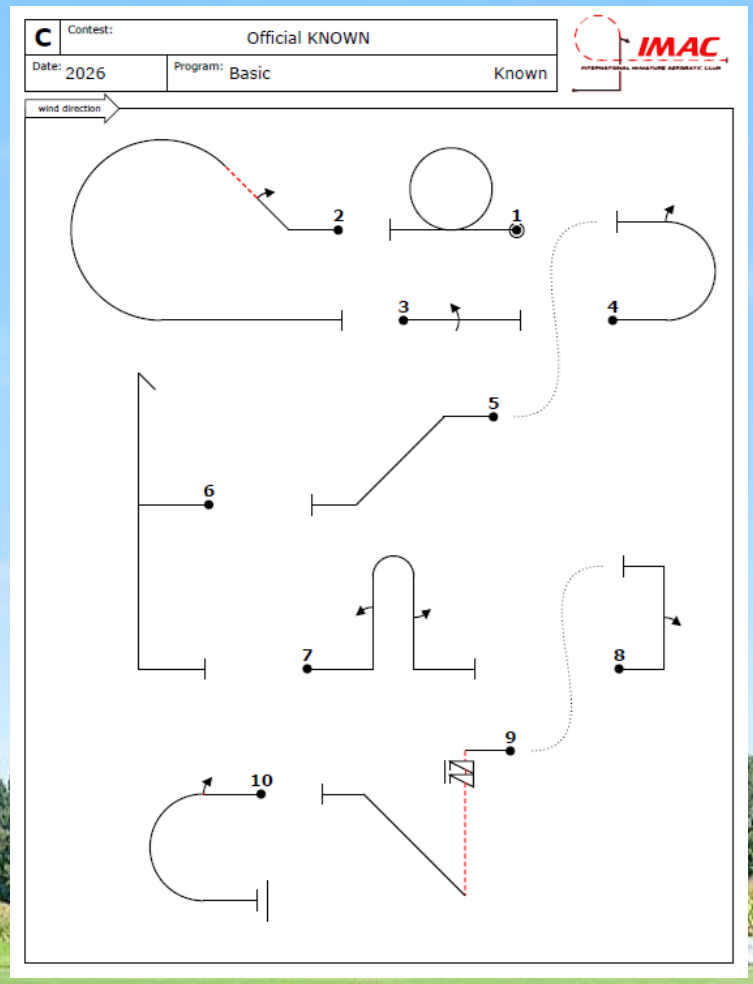
BASIC SEQUENCE

B AND C DRAWINGS





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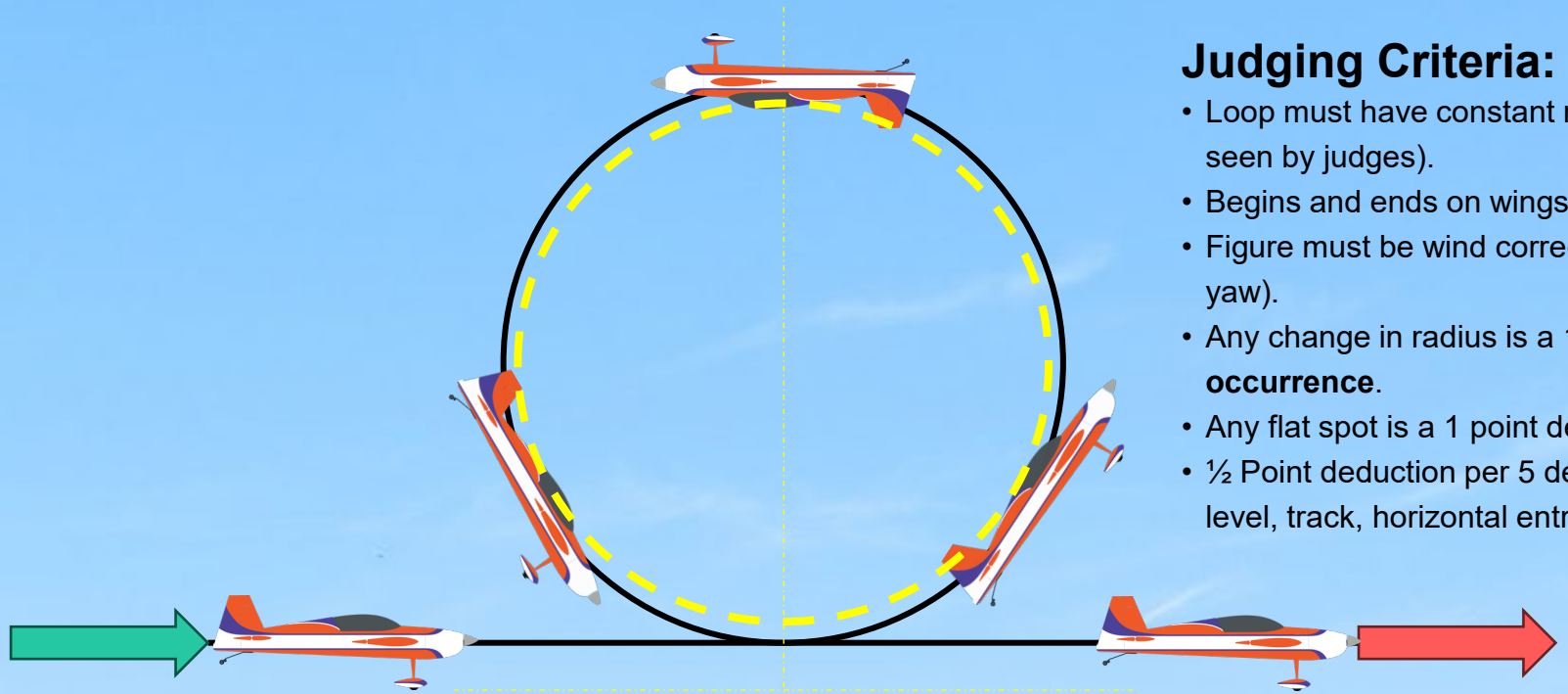
2026 IMAC Basic

Figure 1 - Loop



Judging Criteria:

- Loop must have constant radius (it must appear round as seen by judges).
- Begins and ends on wings-level horizontal line.
- Figure must be wind corrected in all axes (pitch, roll, and yaw).
- Any change in radius is a 1 point deduction **per occurrence**.
- Any flat spot is a 1 point deduction **per occurrence**.
- ½ Point deduction per 5 degrees deviation from wings-level, track, horizontal entry & horizontal exit.

From upright, pull to a loop and exit upright

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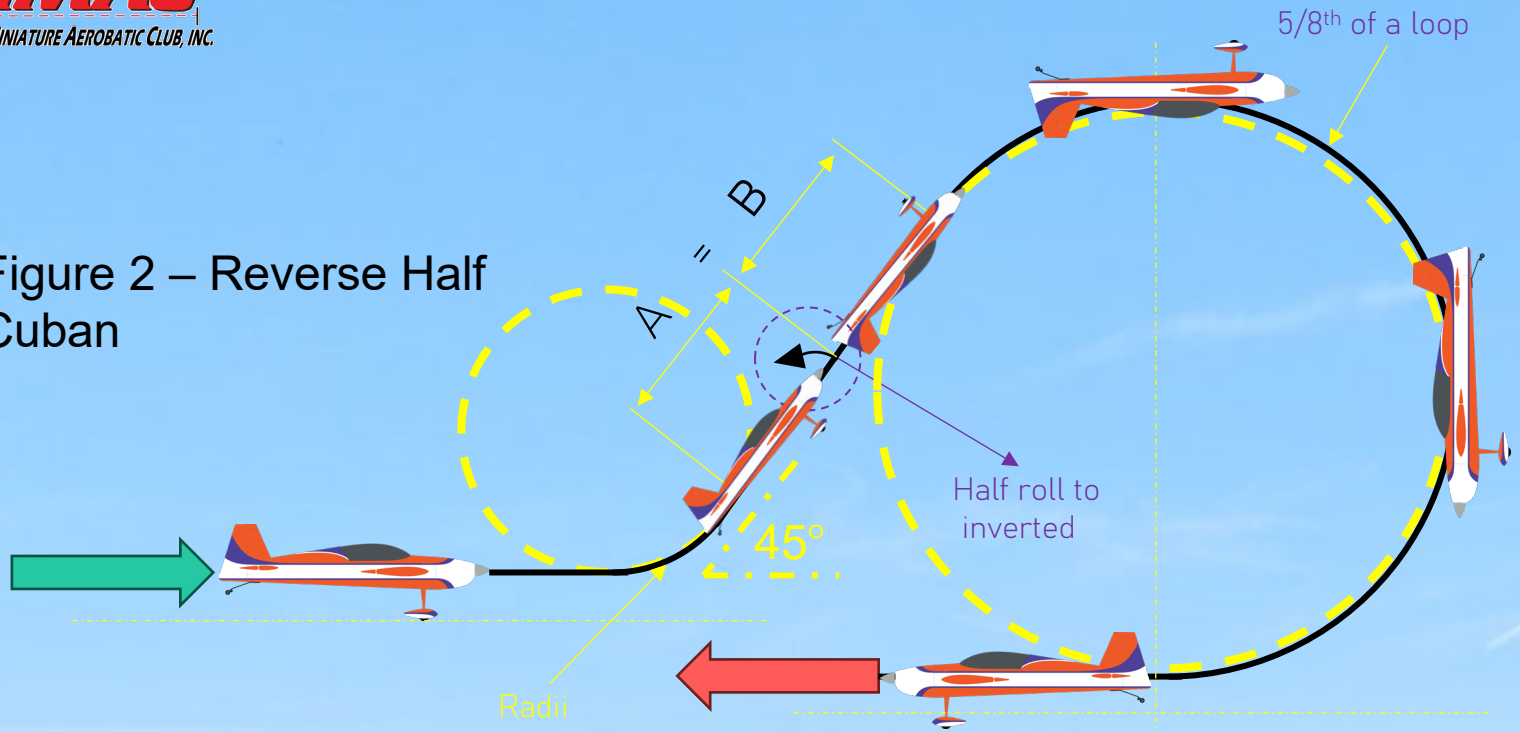
Figure 2 – Reverse Half Cuban



Judging Criteria:

- Figure must be wind corrected.
- The radii of the 1/8 and 5/8 loops do not have to be equal.
- Length of 45^0 up-line not specified.
- Must have equal length line before and after half roll.
- Half roll on 45° up-line must be centered and can be in either direction. The roll rate must be constant. 1 point deduction for each roll rate change.
- Entry and exit altitudes may be different.
- ½ Point deduction per 5 degrees deviation from wings-level, track, 45^0 line, horizontal entry & horizontal exit.
- There must be a distinct horizontal line between figures 1 and 2. 1 point deduction from each figure for omitted line.

From upright, pull to a radii to a 45° line, fly a straight line, then do a half roll to inverted and fly another line then, when these two-line segments are equal, pull a 5/8th of a loop and exit upright.

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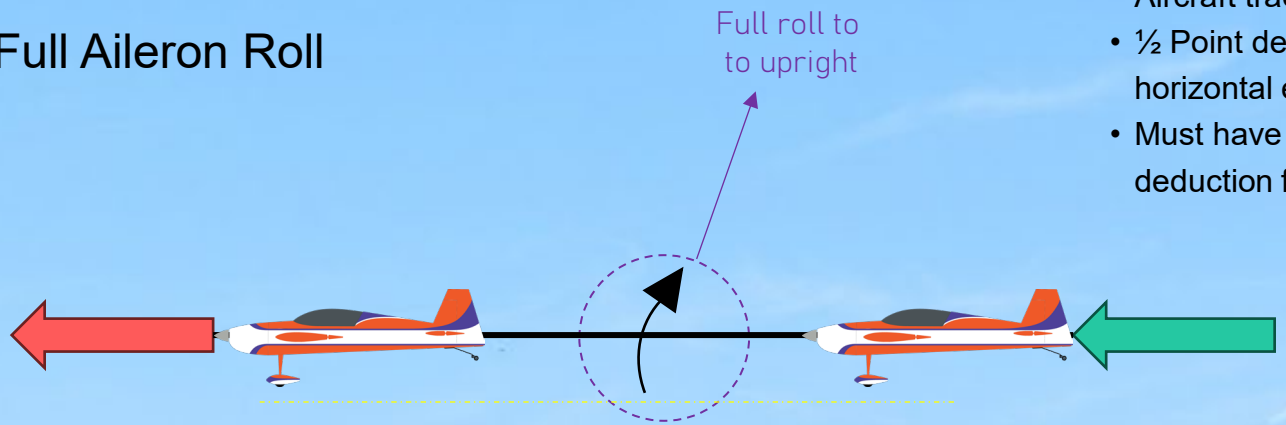
Figure 3 – Full Aileron Roll



Judging Criteria:

- Figure must be wind corrected.
- Full roll must be of a constant rate (pilot's choice of direction).
- 1 Point deduction for each roll rate change.
- Aircraft track must remain horizontal before and during roll.
- ½ Point deduction per 5 degrees deviation from wings-level, track, horizontal entry, & horizontal exit.
- Must have a distinct horizontal line between figures 2 and 3. 1 Point deduction from each figure for omitted line between figures.

From wings level upright, perform one (1) full role from upright to upright.

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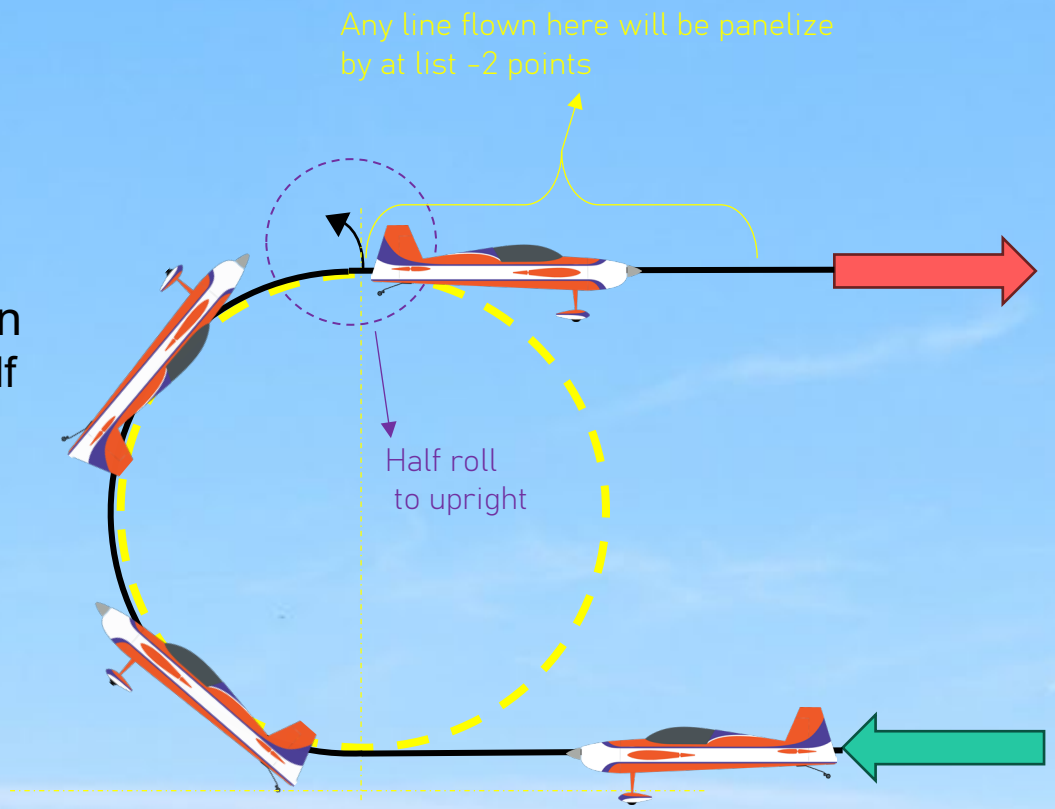
Figure 4 – Immelmann
(Half inside loop with half roll exit)



Judging Criteria:

- Figure must be wind corrected.
- ½ Loop must be constant radius of pilot's choice – must appear round to judges.
- Any variation in radius is a 1 point deduction per occurrence.
- Any flat spot is a 1 point deduction per occurrence.
- ½ Point deduction per 5 degrees deviation from wings-level, track, horizontal entry & horizontal exit.
- ½ Roll must be of a constant rate (pilot's choice of direction) and completed immediately after ½ inside loop. 1 point deduction for each roll rate change.
- Drawing a line between ½ loop and ½ roll is a downgrade of 2 points.
- Aircraft starting ½ roll prior to completing the ½ loop radius (wings-level horizontal) is a downgrade of ½ point per 5 degrees of remaining loop radius.
- Must be a distinct horizontal line between figures 3 and 4, deduction of 1 point from each figure for omitted line.

From upright, pull half a loop to inverted. Immediately after radius completion execute half a roll (1/2) to wings-level upright flight.

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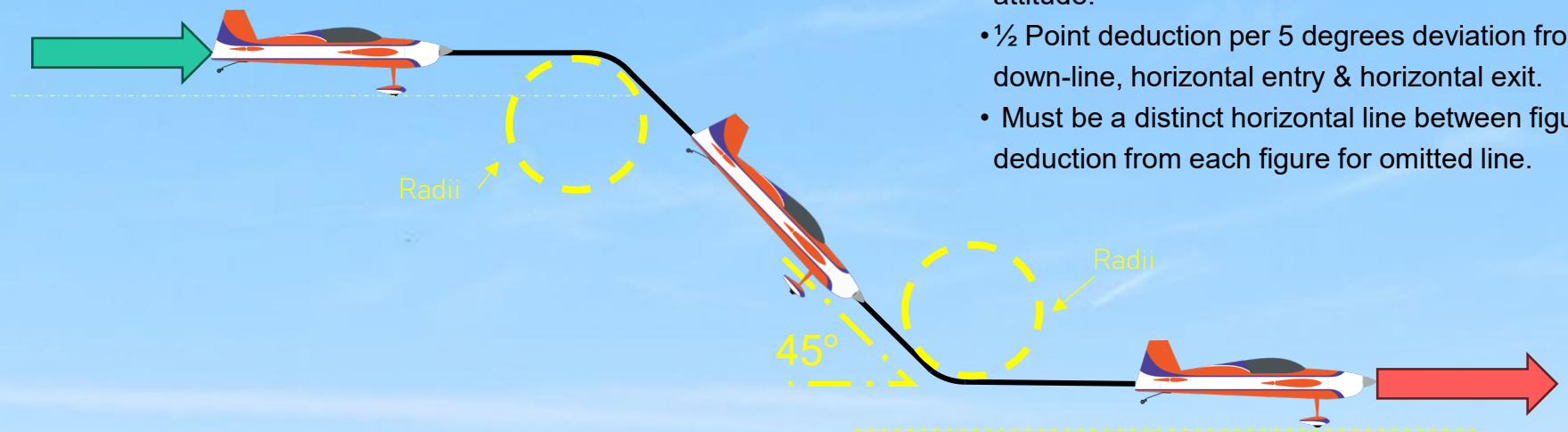
Figure 5 – 45 Degree Downline



Judging Criteria:

- Part loop radii do not have to be equal.
- All lines and part loops must be wind corrected.
- Aircraft **track** must be a true 45 degree downline. In wind corrected flight the aircraft's pitch attitude may be steeper or shallower the 45 degree line. Judges must take care to judge the aircraft's track, not attitude.
- ½ Point deduction per 5 degrees deviation from wings-level, 45 degree down-line, horizontal entry & horizontal exit.
- Must be a distinct horizontal line between figures 4 and 5. 1 point deduction from each figure for omitted line.

From upright, push to a 45° downline and draw a line and then pull to a horizontal line and exit upright

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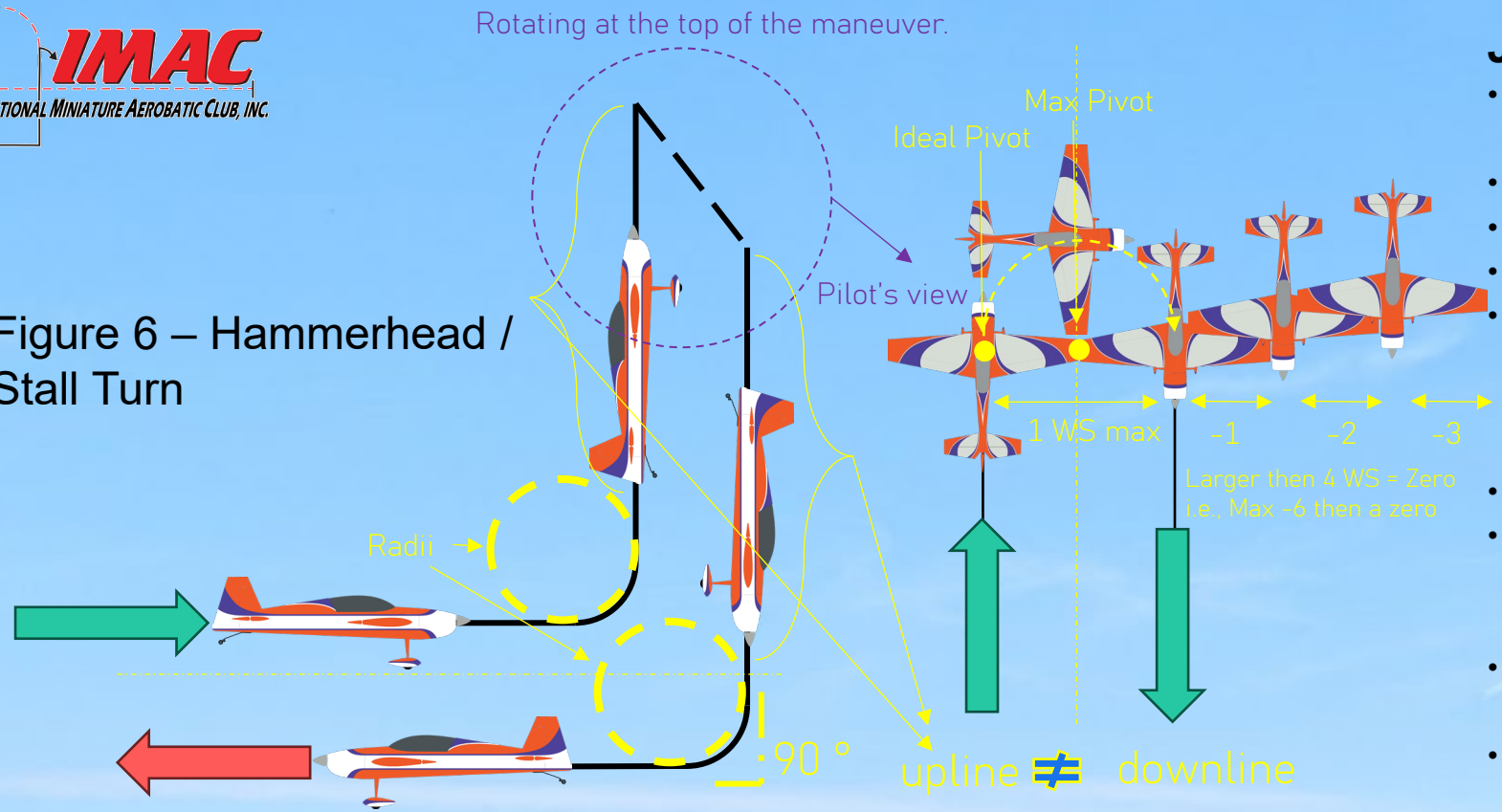

Figure 6 – Hammerhead / Stall Turn

From upright, pull 90° and establish an upline. Then perform a Hammerhead, after the plane pivots, establish a 90 ° downline. Pull to a horizontal line and exit upright.

Judging Criteria:

- Figure must be wind corrected except for the pivot (stalled portion).
- Entry and exit altitude may be different.
- Entry and exit radii may be different.
- Up-line and down-line may be different lengths.
- As the aircraft nears the point where it stops climbing, it must pivot in a vertical plane (pitch axis). Deduction of ½ point per five degrees for not pivoting in a vertical plane (pilots may pivot in either direction).
- There must be no rotation around the pitch or roll axis.
- ½ Point deduction per 5 degrees deviation from wings-level, track, vertical up-line, vertical down-line, horizontal entry & horizontal exit.
- ½ Point deduction per 5 degrees of pendulum after the hammer.
- Any visible downward slide **before** the pivot starts will zero the maneuver.
- Must be a distinct horizontal line between figures 5 and 6. 1 Point deduction from each figure for omitted line.

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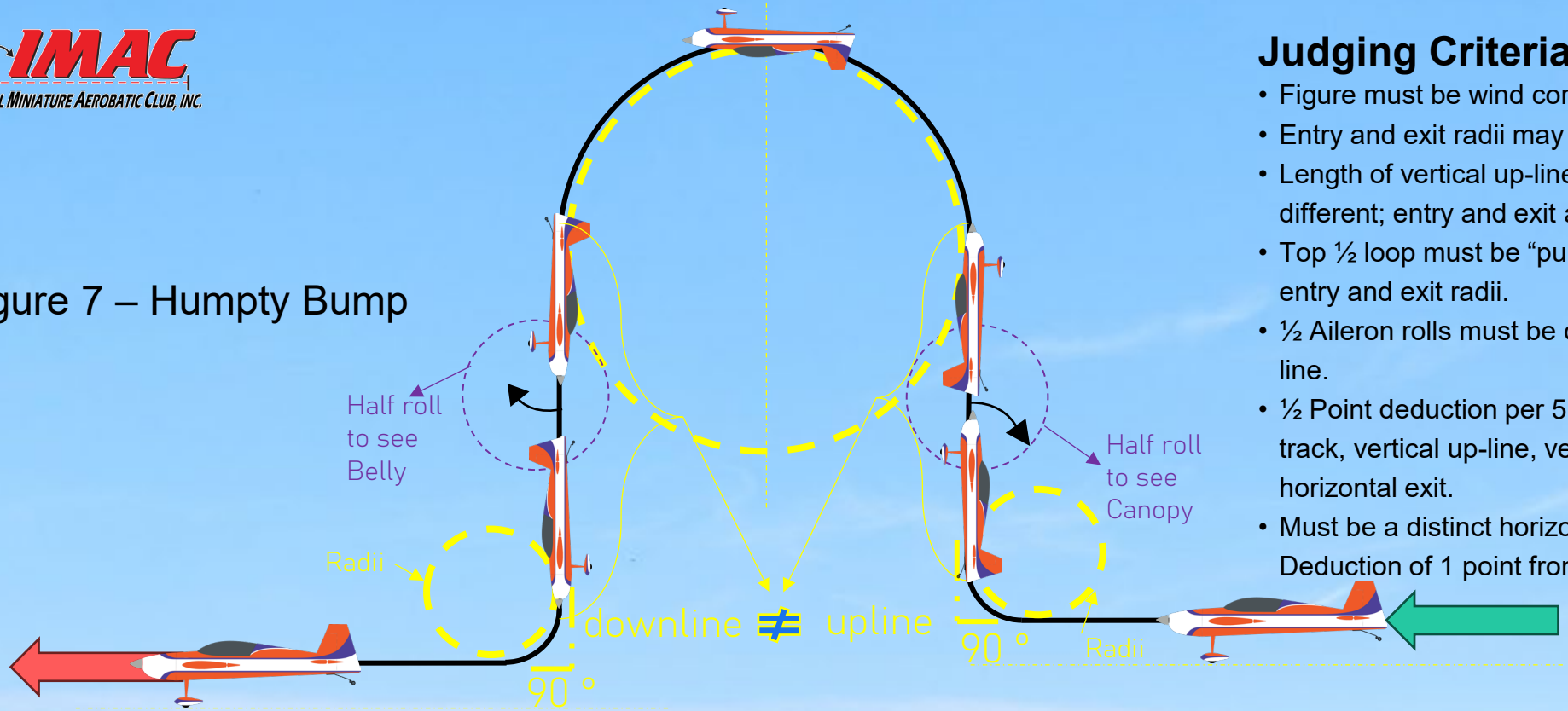
Figure 7 – Humpty Bump



Judging Criteria:

- Figure must be wind corrected.
- Entry and exit radii may be different with no deduction.
- Length of vertical up-line and vertical down-line may be different; entry and exit altitude may be different.
- Top ½ loop must be “pull” (inside) and may be different from the entry and exit radii.
- ½ Aileron rolls must be centered on vertical upline, and down-line.
- ½ Point deduction per 5 degrees deviation from wings-level, track, vertical up-line, vertical down-line, horizontal entry & horizontal exit.
- Must be a distinct horizontal line between figures 6 and 7. Deduction of 1 point from each figure for omitted line.

From upright, pull a radii to a 90° upline and fly a line then do half a roll to see the canopy and fly another line. At the top when the two segments of line are equal, pull a radii to a half a loop to a 90° downline then do half a roll to see the belly and fly another line. When these two-line segments are equal, pull to an upright straight and level flight.

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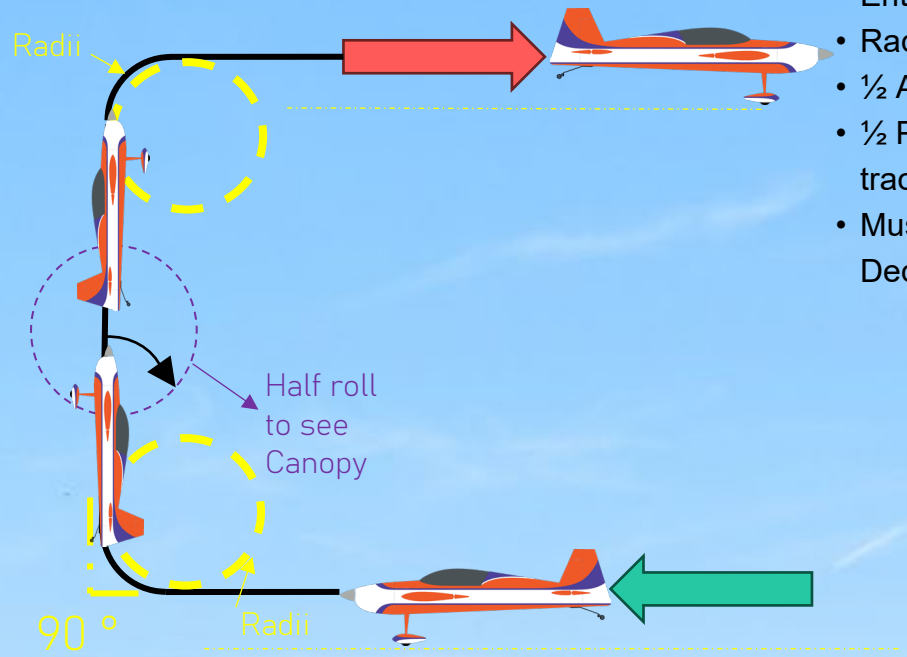
Figure 8 – Vertical Up line



Judging Criteria:

- Figure must be wind corrected.
- Entry and exit radii may be different with no deduction.
- Radii may be different from the entry and exit.
- ½ Aileron rolls must be centered on vertical upline.
- ½ Point deduction per 5 degrees deviation from wings-level, track, vertical up-line, horizontal entry & horizontal exit.
- Must be a distinct horizontal line between figures 6 and 7. Deduction of 1 point from each figure for omitted line.

From upright, pull a radii to a 90° upline and fly a line then do half a roll to see the canopy and fly another line. At the top when the two segments of line are equal, push a radii to an upright straight and level flight.

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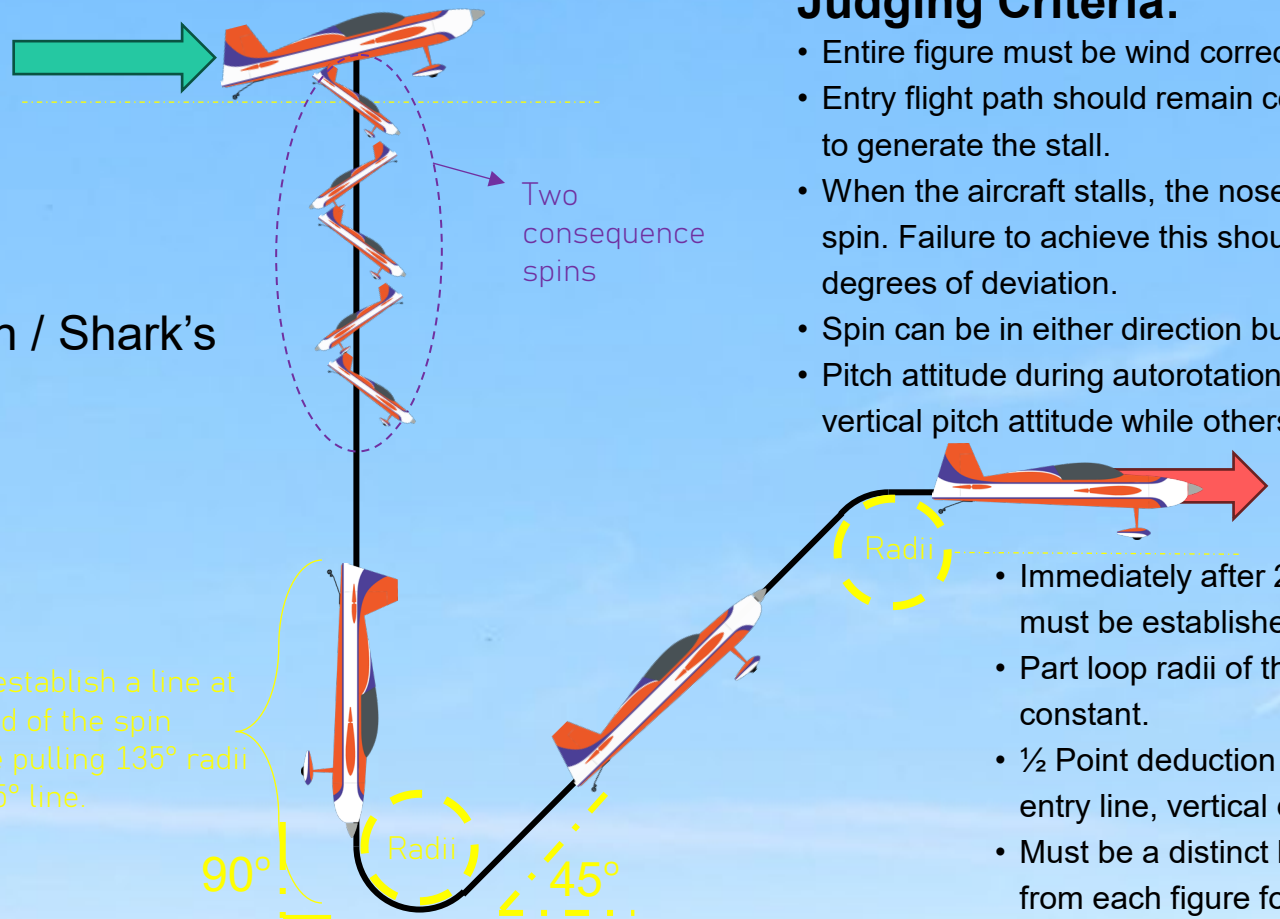
Figure 9 – Spin / Shark's Tooth



Judging Criteria:

- Entire figure must be wind corrected (EXCEPT just prior to the stall and during autorotation).
- Entry flight path should remain constant; not be influenced by pitch attitude changes required to generate the stall.
- When the aircraft stalls, the nose and the wing must drop simultaneously in the direction of the spin. Failure to achieve this should be considered a "late entry" and downgraded ½ point per 5 degrees of deviation.
- Spin can be in either direction but 2 turns must be in same direction with no hesitation.
- Pitch attitude during autorotation is not a judging criteria as some aircraft spin in a nearly vertical pitch attitude while others spin somewhat flat in conventional spins.
- If the aircraft never stalls, it is apparent that it cannot spin, and a zero (0) must be given.
- Immediately after 2 turns are completed a 90° wind corrected down vertical line must be established. 1 Point deduction for an omitted vertical line.
- Part loop radii of the shark's tooth do not need to be equal, but must be constant.
- ½ Point deduction per 5 degree deviation from wings-level track, horizontal entry line, vertical down-line, 45 degree upline, & horizontal exit.
- Must be a distinct horizontal line between figures 8 and 9. Deduction of 1 point from each figure for omitted line.

From upright, enter a spin by stalling the plane and make two spins, when finished, fly a 90° downline, then pull a radii to a 45° upline and fly a line, then push a radii to an upright straight and level flight

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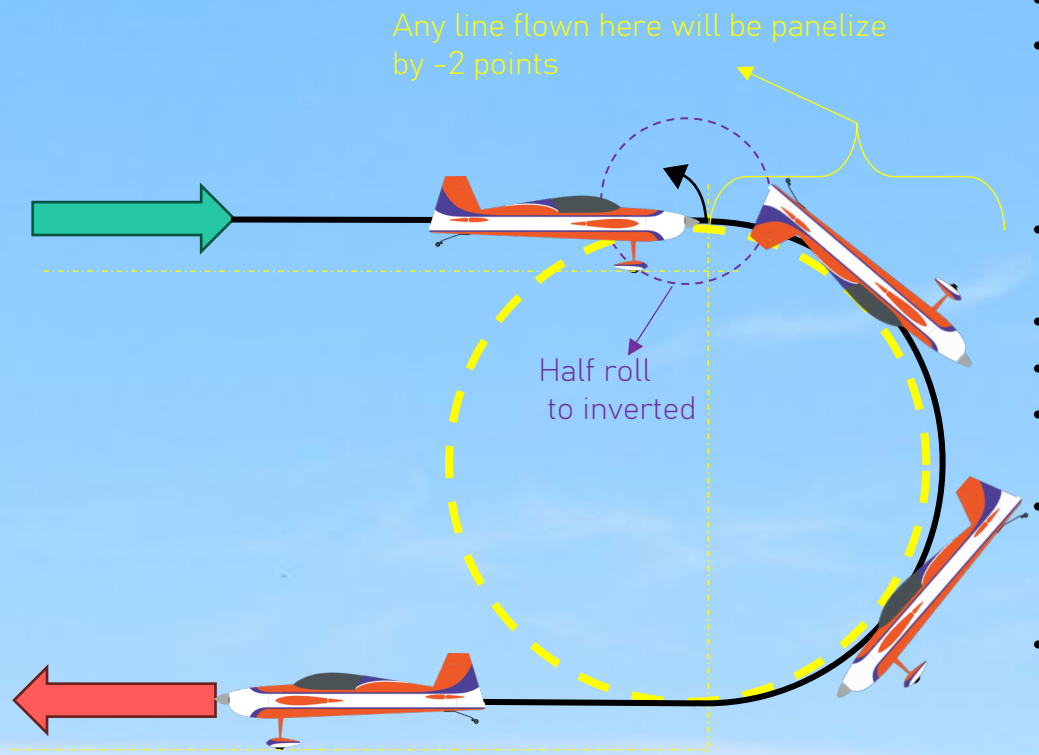
Figure 10 – Split S
(Half roll half inside loop)



Judging Criteria:

- Figure must be wind corrected.
- ½ Roll must be of a constant rate (pilot's choice of direction) and completed immediately prior to ½ inside loop. 1 point deduction for each roll rate change. Drawing a line between ½ roll and ½ loop is a downgrade of 2 points.
- ½ Loop must be constant radius of pilot's choice – must appear round to judges.
- Any variation in radius is a 1 point deduction per occurrence.
- Any flat spot is a 1 point deduction per occurrence.
- ½ Point deduction per 5 degrees deviation from wings-level, track, horizontal entry & horizontal exit.
- Aircraft starting ½ loop prior to completing the ½ roll is a downgrade of ½ point per 5 degrees radius performed before roll completion.
- Must be a distinct horizontal line between figures 9 and 10, deduction of 1 point from each figure for omitted line.

From upright, execute half a roll (1/2) to an inverted flight and immediately pull half a loop to an upright straight and level flight. Last maneuver, end of sequence.

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