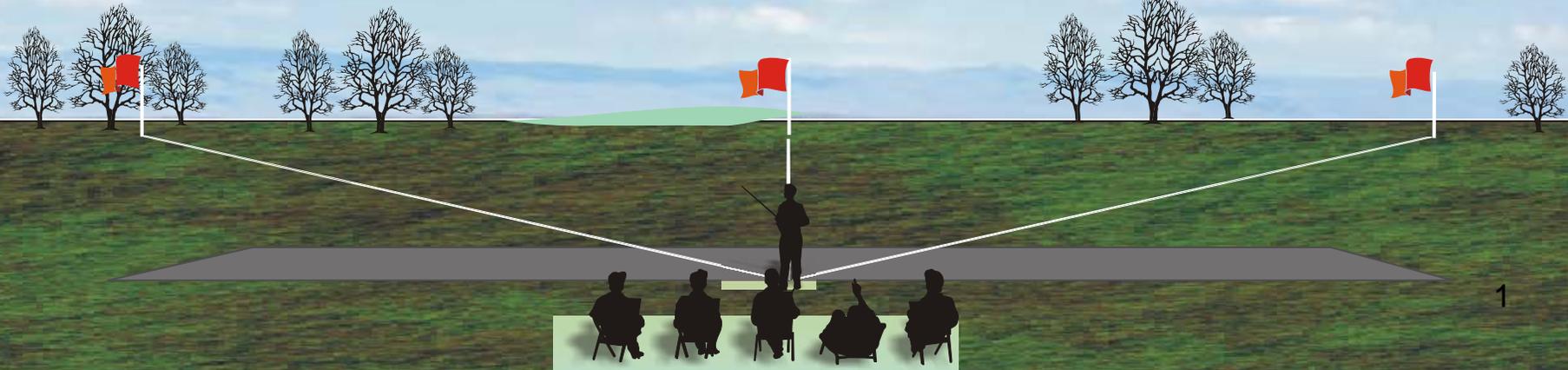


MAAC Precision Aerobatics JUDGES TRAINING PRESENTATION

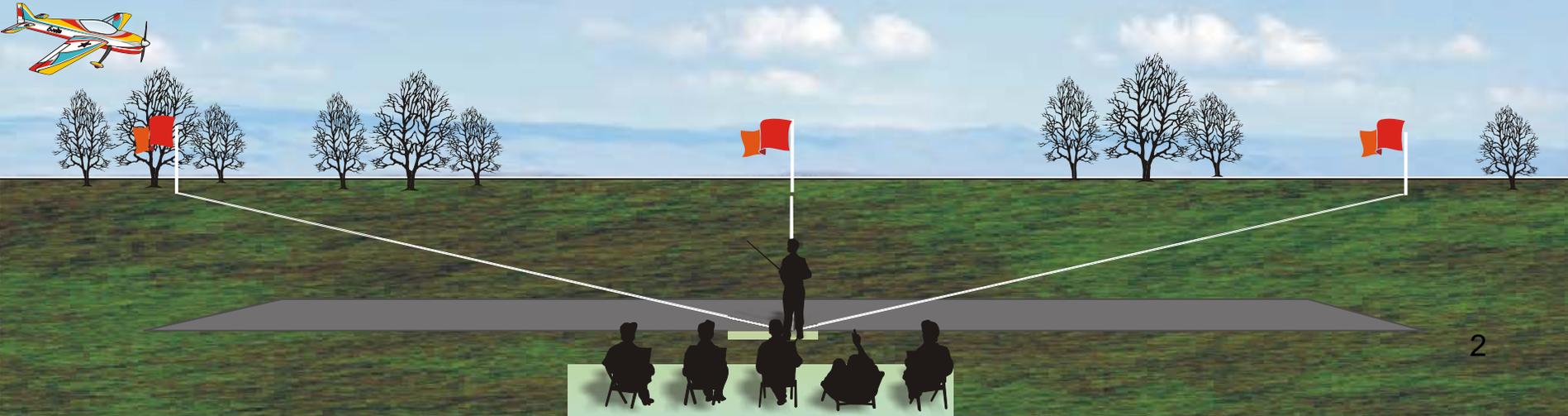
2008





SCHEMATIC MANEUVER DIAGRAMS

INTERMEDIATE



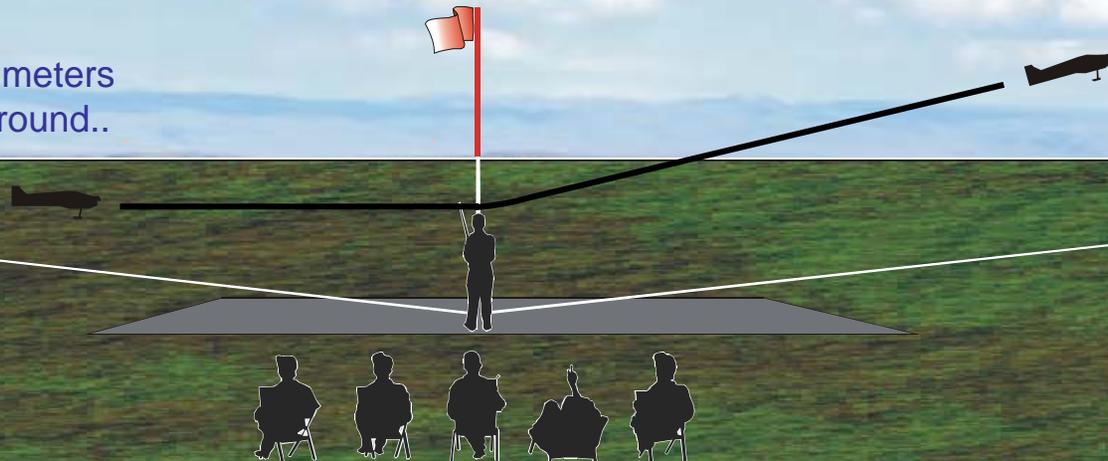
1 – Takeoff

- ✎ It is not necessary for the model to stand still on the ground with the engine running without being held before the takeoff begins.
- ✎ It is also not necessary for the model to reach 2 meters in the same distance as the takeoff roll.
- ✎ The takeoff should not be downgraded for wing dips caused by air turbulence unless the wings are not immediately leveled.
- ✎ The lift off should be within two (2) meters of center for maximum points

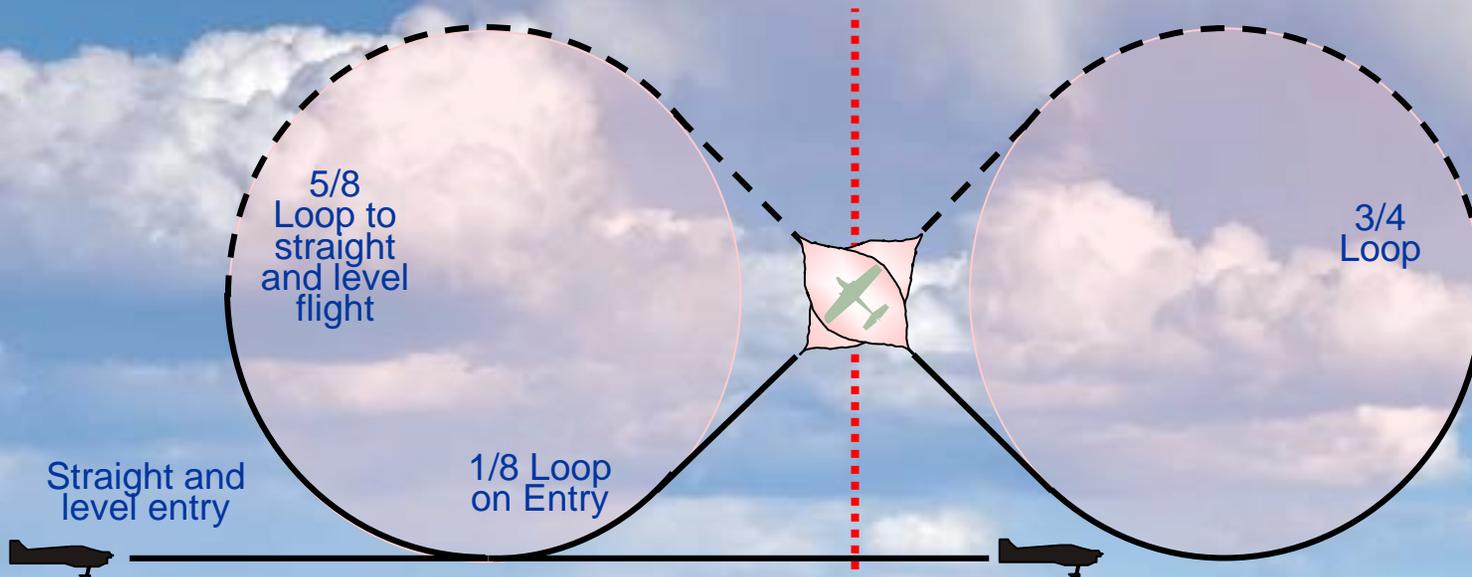
The maneuver is complete when the model is approximately two (2) meters (6-1/2 feet) from the ground..

Downgrades

- ✎ Model jumps from the ground.
- ✎ Retouches the ground after becoming airborne.
- ✎ Steep climb angle.
- ✎ Gallops in elevation during climb.
- ✎ Wings not level at any time.
- ✎ Model does not accelerate smoothly.
- ✎ Model passes behind the judges line, scored zero (0) points.



2- (U) Reverse Cuban 8 with Half Rolls



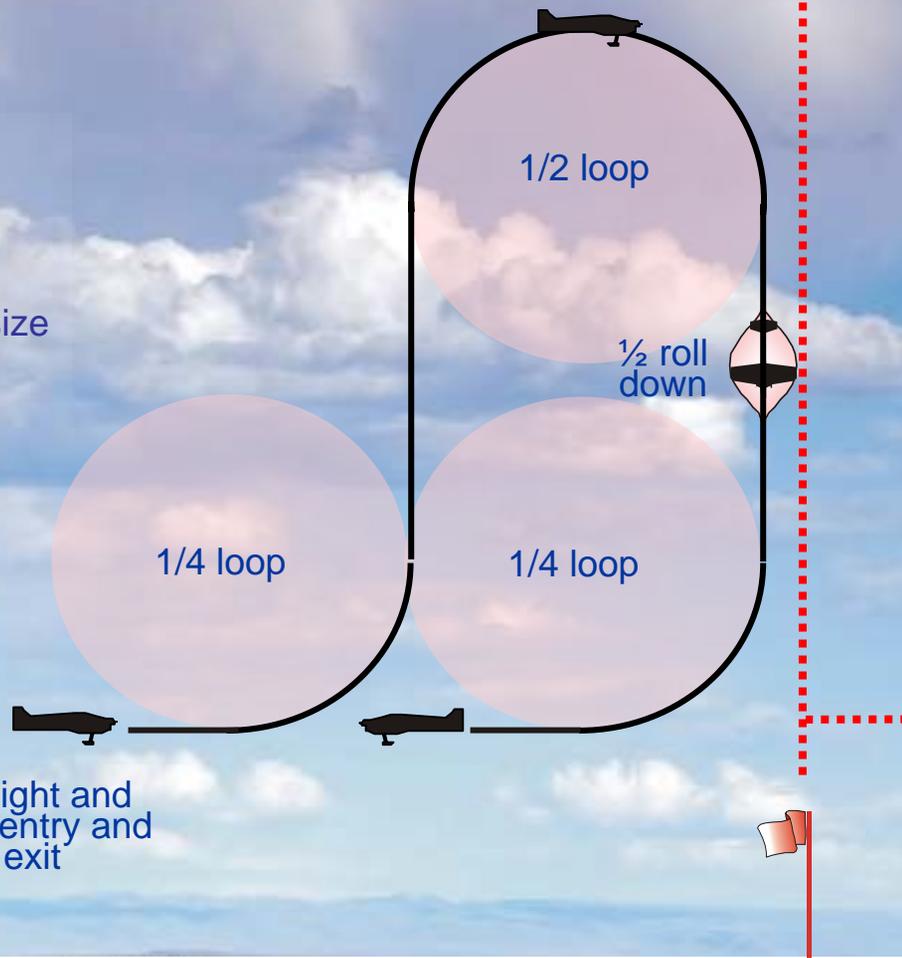
-  Loops not round and same size
-  Track of Model not at 45 degrees at start and finish of rolls.
-  Changes in heading (track) during loops and rolls.
-  Under or over rotation of roll elements, 1 pt/15° rule
-  1/2 rolls not centered in the 45 degree lines and on each other.

Straight and level exit

3 – Pull Push Pull Humpty Bump, 1/2 Roll Down

- ✍ Track not vertical in climb and dive.
- ✍ Roll not centered in vertical line.
- ✍ Over or under rotation on 1/2 roll, one point per 15-Degree rule.
- ✍ Loop segments not round with same size and radius.

✍ Entry and exit altitudes may be different

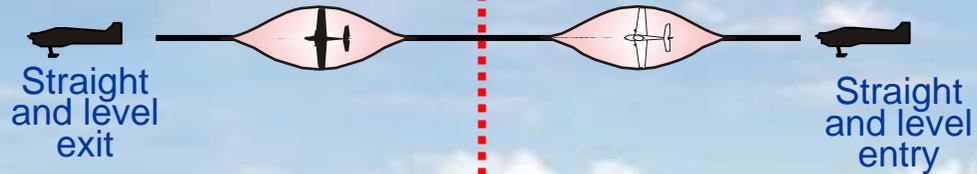


Straight and level entry and exit

4 - (D) Two Point (2 of 2 Pt) Roll

- ✎ Model does not hesitate at inverted.
- ✎ Roll rates not constant.
- ✎ Over or under rotation of rolls, one point per 15-Degree Rule.
- ✎ Change is altitude.
- ✎ Changes in heading (track).
- ✎ Roll rates not constant.

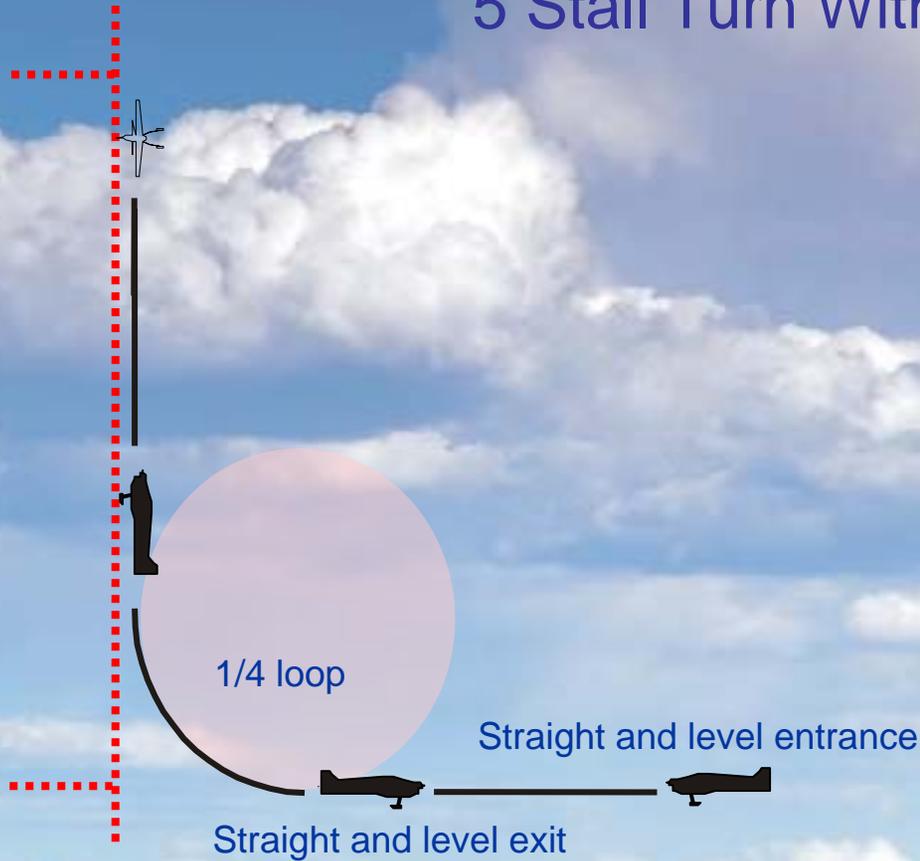
✎ Center is middle of inverted flight



5 Stall Turn Without Rolls

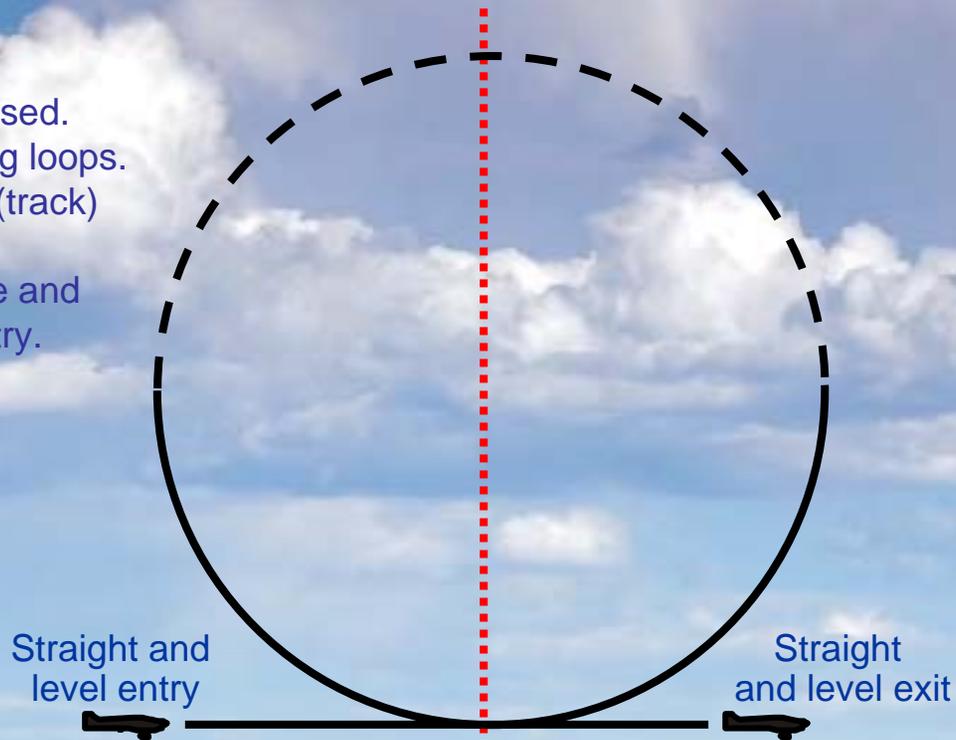
- ✎ Model not level at start and finish.
- ✎ Track does not become exactly vertical.
- ✎ Model track not vertical at start and finish of stall turn.
- ✎ Return path not parallel to entry path.
- ✎ Pivot radius greater than 1/2 wingspan.
- ✎ Pendulum movement after stall.
- ✎ Loop segments not round with same size and radius.

✎ Entry and exit altitudes may be different



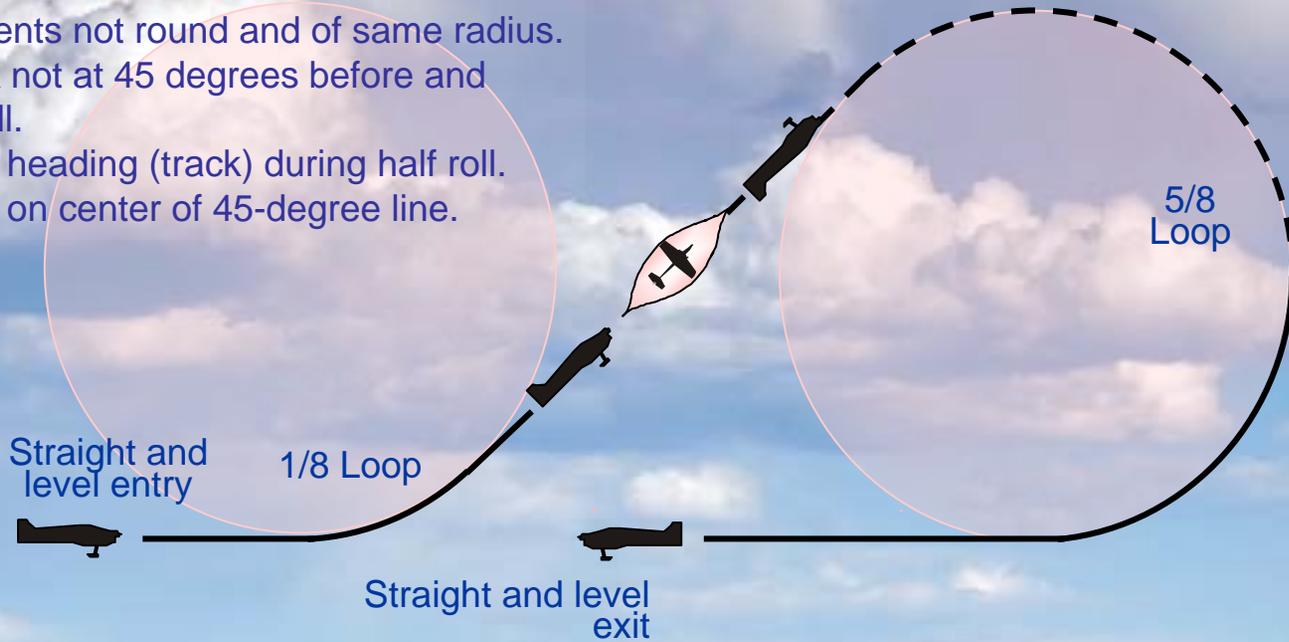
6 – (U) Three Inside Loops

- ✎ Loops not round.
- ✎ Loops not superimposed.
- ✎ Wings not level during loops.
- ✎ Changes in heading (track) during loops.
- ✎ Exit not same altitude and heading (track) as entry.



7 – Half Reverse Cuban 8

- ✎ Loop segments not round and of same radius.
- ✎ Model track not at 45 degrees before and after half roll.
- ✎ Changes in heading (track) during half roll.
- ✎ Half roll not on center of 45-degree line.



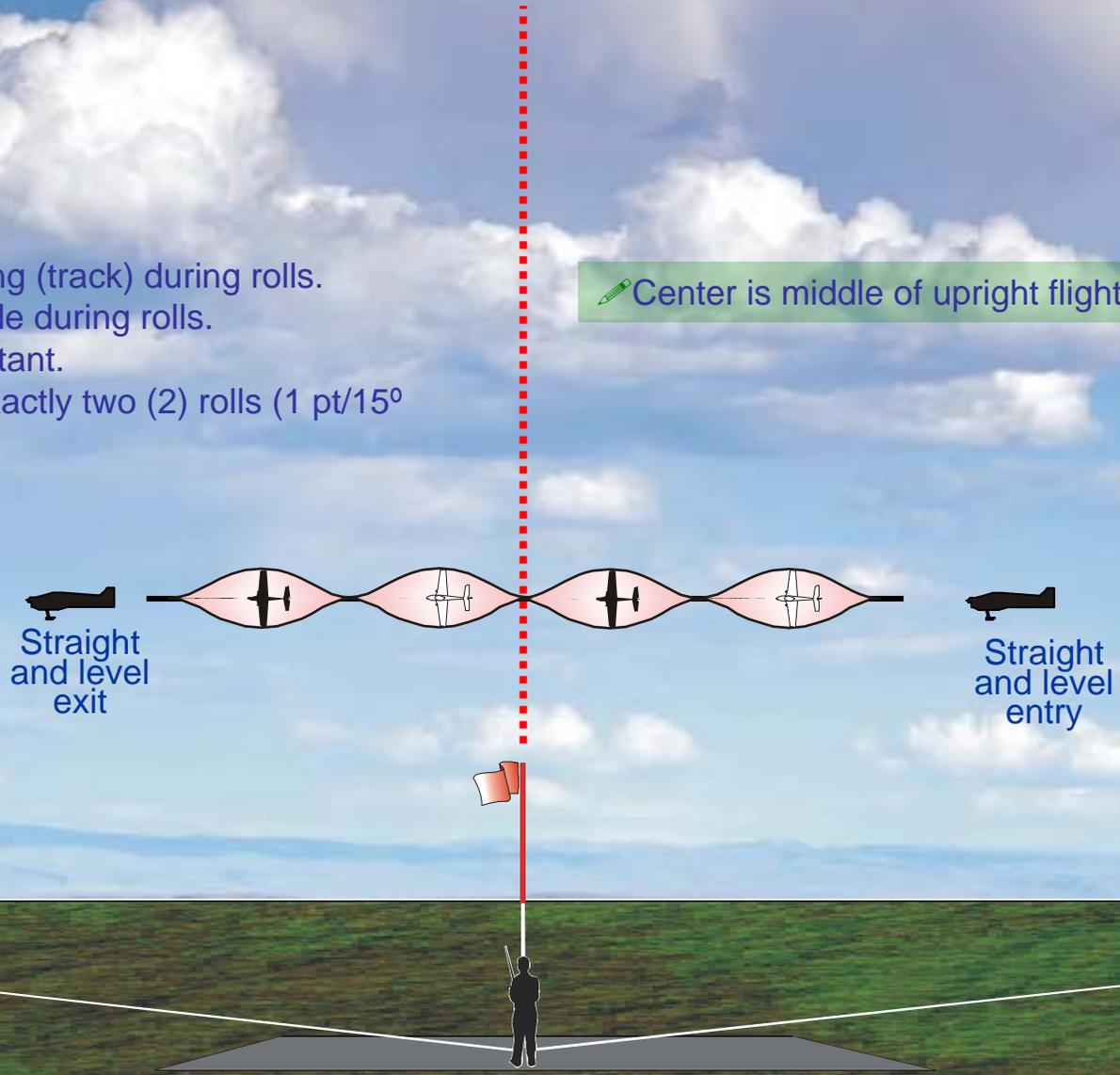
✎ **NOTE:** In a TA maneuver, entry and exit altitude changes are allowed. To change altitude in this maneuver, the 45 degree line may be extended or truncated. All loop radii must remain equal.



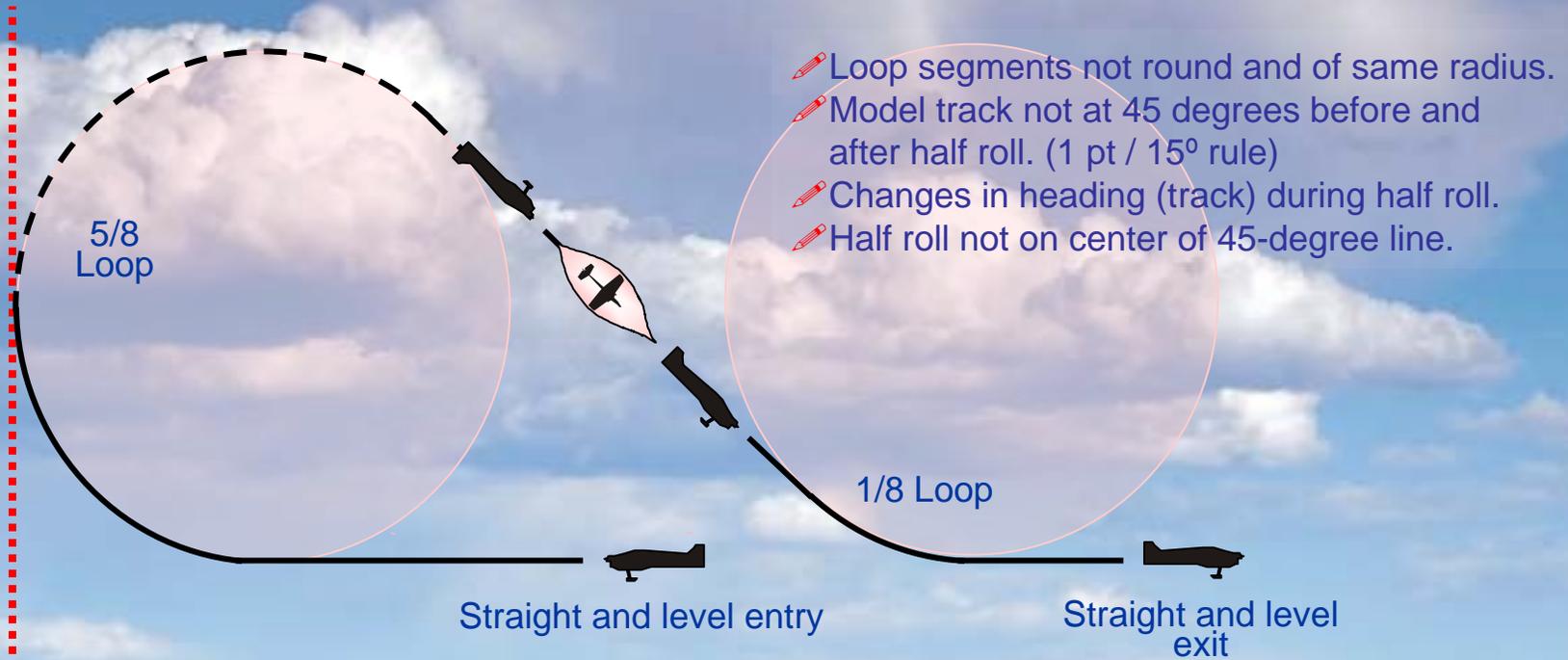
8 - (D) Two Horizontal Rolls

- ✎ Changes in heading (track) during rolls.
- ✎ Changes in altitude during rolls.
- ✎ Roll rate not constant.
- ✎ Model does do exactly two (2) rolls (1 pt/15° rule)

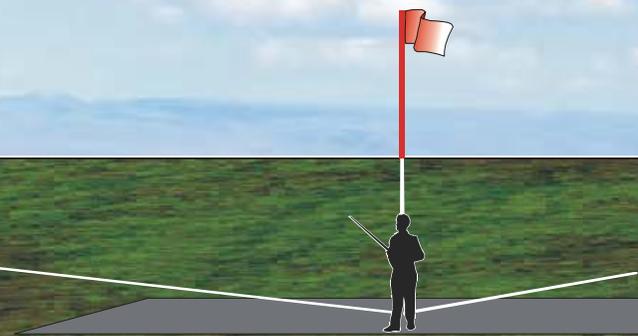
✎ Center is middle of upright flight.



9 – Half Cuban 8

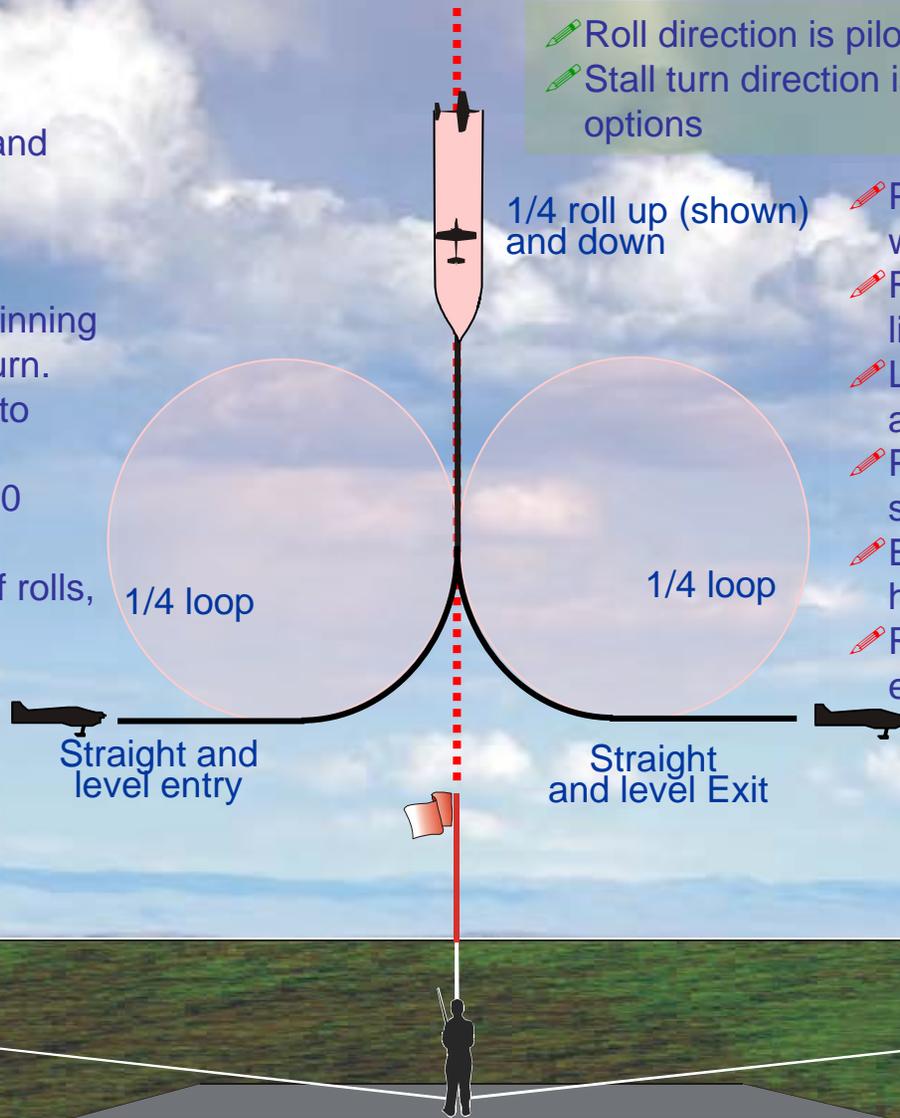


 **NOTE:** In a TA maneuver, entry and exit altitude changes are allowed. To change altitude in this maneuver, the 45 degree line may be extended or truncated. All loop radii must remain equal.



10 – (U) Stall turn, 1/4 Rolls Up and Down

- ✎ Model not level at start and finish
- ✎ Track does not become exactly vertical
- ✎ Track not vertical at beginning and end of rolls and stall turn.
- ✎ Return path not parallel to entry path
- ✎ Track of stall turn not 180 degrees.
- ✎ Over or under rotation of rolls, 1 pt/15° rule.



- ✎ Roll direction is pilot's option
- ✎ Stall turn direction is pilot's options

1/4 roll up (shown) and down

- ✎ Pivot radius greater than 1/2 wingspan.
- ✎ Rolls not centered in vertical lines.
- ✎ Loop segments not round and of equal radius.
- ✎ Pendulum movement after stall.
- ✎ Exit not same altitude and heading (track) as entry.
- ✎ Roll rates not constant and equal.



11 – Immelman Turn

- ✎ Model not level at start or finish.
- ✎ Roll not immediately after half loop.
- ✎ Changes in heading (track) after half loop or prescribed roll.
- ✎ Model track does not finish exactly opposite direction of entry.
- ✎ Half loop not round.
- ✎ Over or under rotation on half roll, 1 pt/15° rule

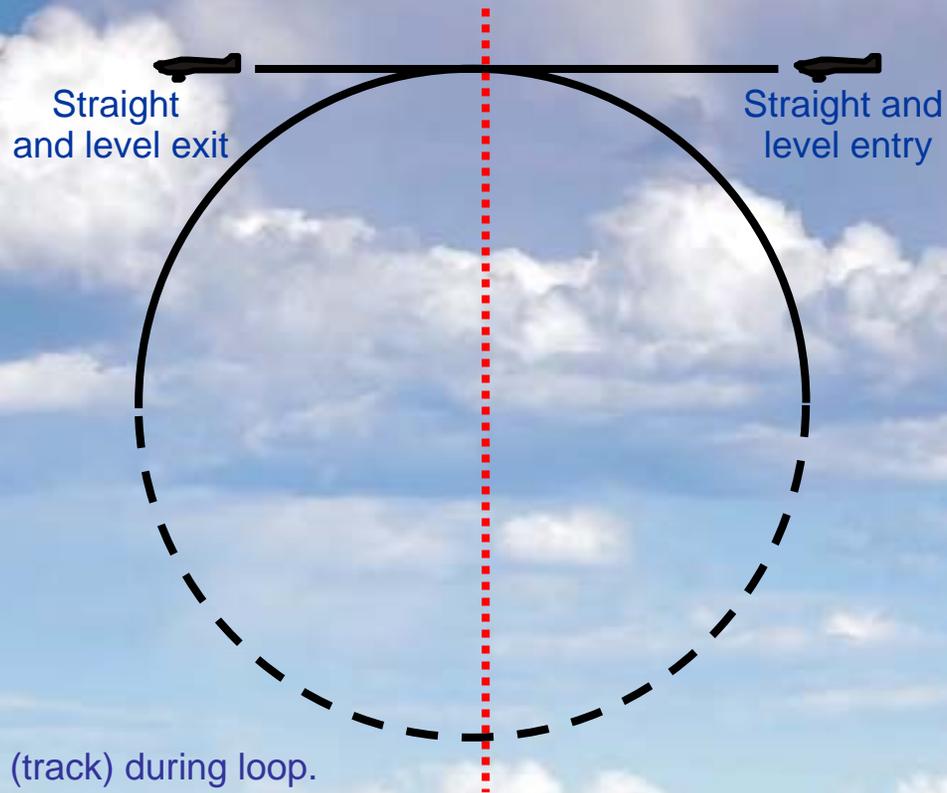
Straight and level exit

Straight and level entry

1/2 loop

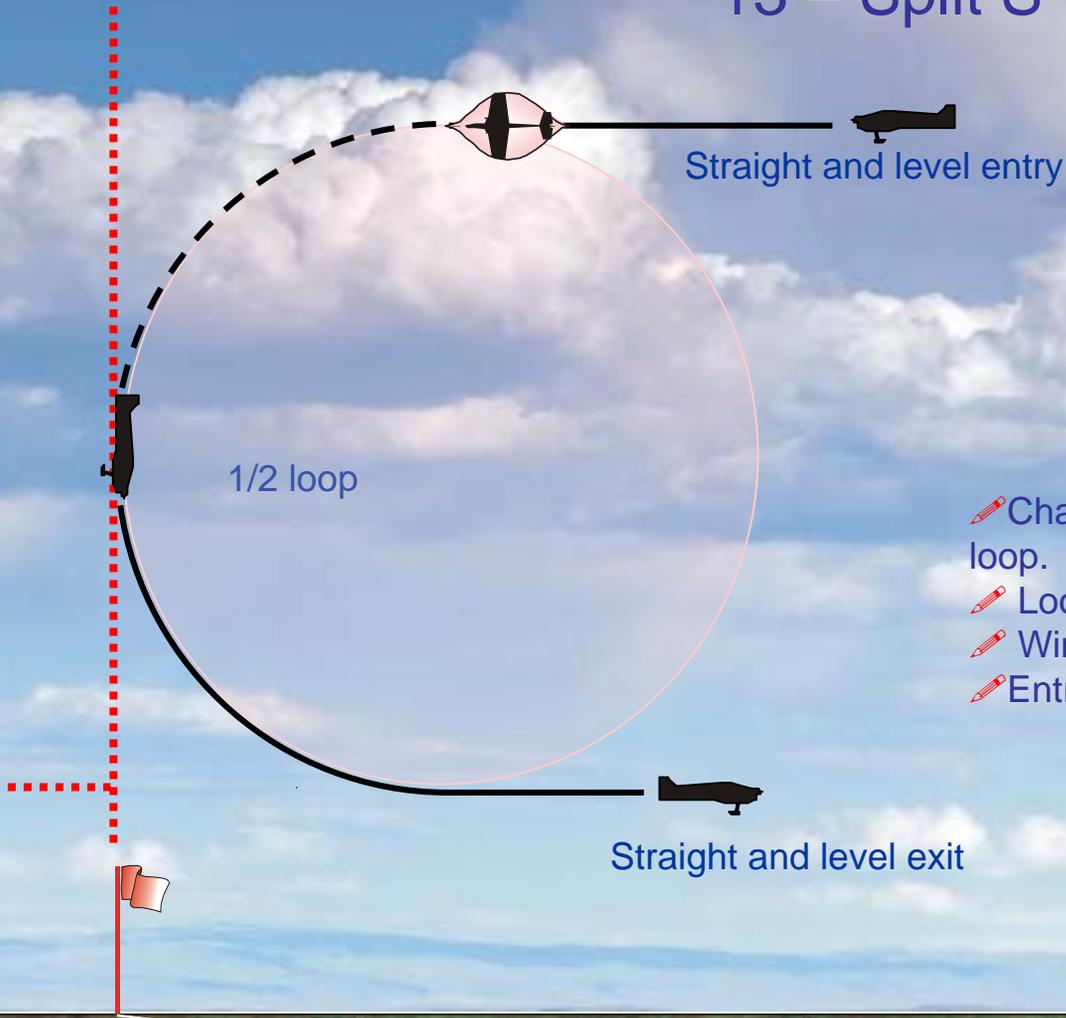


12 – (D) One Outside Loop from the Top

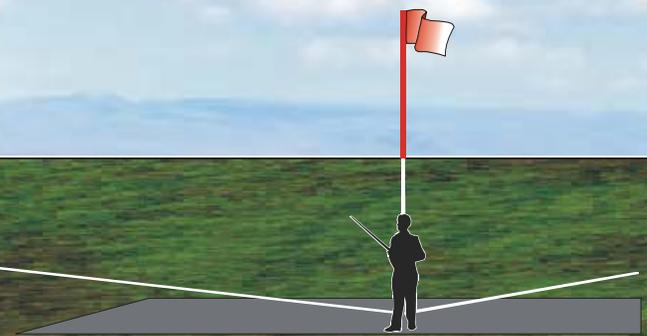


- ✎ Changes in heading (track) during loop.
- ✎ Loop not round with constant radius
- ✎ Wings not level during loop.
- ✎ Entry and exit not the same altitude

13 – Split S

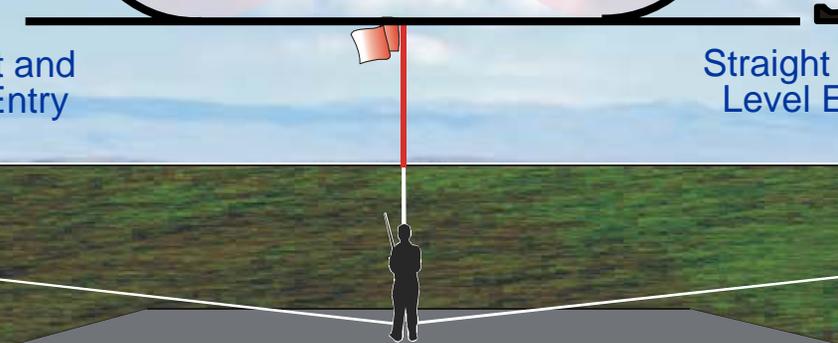
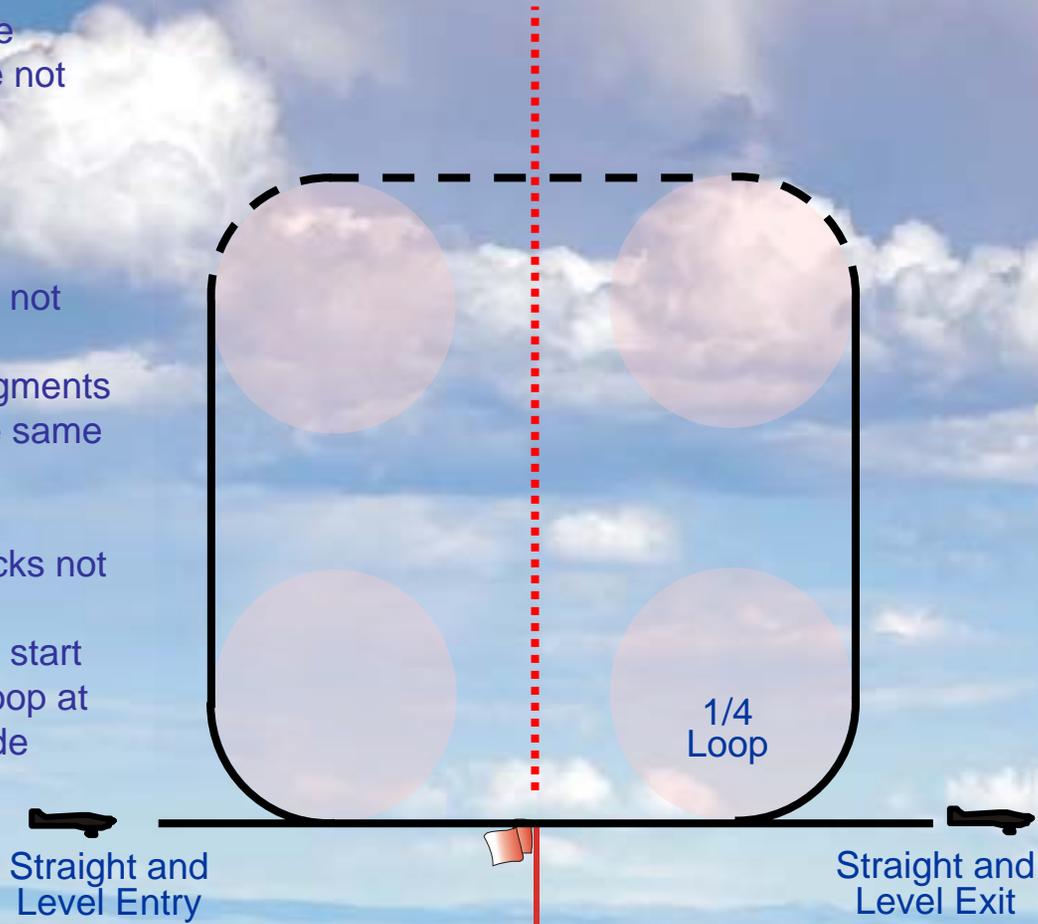


- ✎ Changes in heading (track) during loop.
- ✎ Loop not round with constant radius
- ✎ Wings not level during loop.
- ✎ Entry and exit not the same altitude



14 – (U) Square Loop

-  Loop not square
-  Sides of square not same size
-  Model changes heading (track)
-  Wings not level
-  Loop segments not round
-  Corner loop segments do not have the same radius
-  Climbing and descending tracks not vertical
-  Model does not start and finish the loop at the same altitude

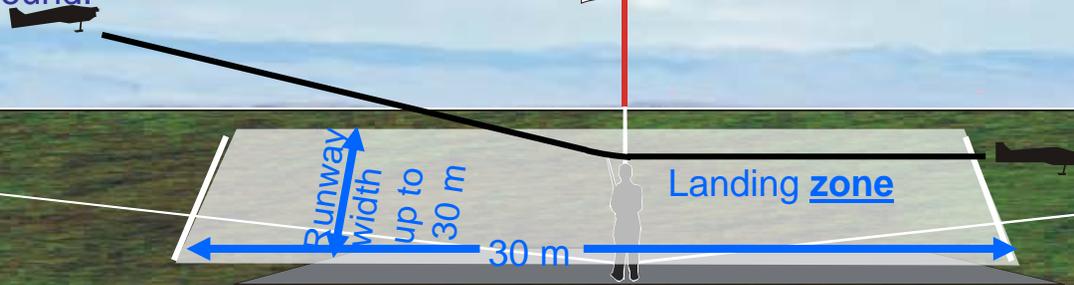


19 – Landing

The landing will not be downgraded if:

- ✎ The model rolls to a controlled stop within 10 meters.
- ✎ Wing dips which are caused by air turbulence unless they are not immediately corrected.
- ✎ The pilot “slips to a landing” to handle a crosswind condition in which case a wing will be low
- ✎ Displacement of the touchdown point left or right as long as the landing is in the landing zone
- ✎ Landing zone is 30 m long centered on the judges BUT not more than 30 M wide.

Landing begins when the model is approximately two (2) meters (6-1/2 feet) from the ground.



- ✎ Model passes behind the judges line, zero (0) points.
- ✎ Model impacts the runway due to lack of flare.
- ✎ Model bounces.
- ✎ Changes in track.
- ✎ Model ends on its back, zero (0) points.
- ✎ Model lands outside landing zone (but still on runway).
- ✎ If any undercarriage retracts before the landing is complete, zero (0) points.
- ✎ Aircraft “porpoises” and/or wanders during approach or flare.
- ✎ Aircraft lands outside the landing area or runway, zero (0) points.
- ✎ Aircraft touches down while not straight to runway and ground track.

Landing area:
the entire
defined runway

