

MANEUVER DESCRIPTIONS

Takeoff: The model must start from a standstill. Model should accelerate gradually and the takeoff run should be in a straight line. Plane shall lift off gently and climb at a gradual angle, continuing in its straight flight path until at least six feet off the ground.

The takeoff should be downgraded for the following reasons:

1. Pushing or assisting the model when released.
2. Changes in heading during the take-off run.
3. "Jumping" from the ground.
4. Retouching the ground after becoming airborne.
5. Too steep a climb angle.
6. Gallops in pitch, roll or yaw during climb.
7. Dropping a wingtip.
8. Starting a turn before reaching six feet in altitude.

Note: Hand launching is an automatic zero.

Note: After the maneuver is called "complete", the model is not judged until the next maneuver is called. The model is allowed one down wind "trim pass" before beginning the airborne maneuvers.

Straight Flight Out: The model must be brought parallel to the runway and flown an absolutely straight path into the wind for a distance of approximately 300 feet before starting the Procedure Turn. Straight flight may be downgraded because:

1. The model does not fly a parallel course to the runway.
2. Plane deviates left or right.
3. Does not hold a constant altitude.
4. Gallops in elevation.

Procedure Turn: After the straight flight, the model must turn exactly 90 degrees away from the runway, then exactly 270 degrees in the opposite direction and cross over the point where the first turn commenced. The turn may be downgraded because:

1. First turn not 90 degrees.
2. Second turn not 270 degrees.
3. Changes in altitude during turn.
4. Turns not smooth and circular.
5. Does not head back over exact outgoing path.

Straight Return: The model should fly a down wind course along the same line as the outgoing path. The straight flight back may be downgraded because:

1. Turns or wiggles during the straight flight.
2. Changes in altitude.
3. Flight not along original path.

Figure 8 (parallel to runway): Directly after the straight flight back, the model starts a horizontal figure 8. The figure shall be parallel to the runway. Maneuver is finished on the same heading as its entry. The Figure 8 should be downgraded for the following:

1. First full circle not smooth or round.
2. First full circle has gallops in pitch, roll, or yaw.
3. First full circle changes altitude.
4. Second full circle not smooth or round
5. Second full circle has gallops in pitch, roll or yaw.
6. Second full circle changes altitude.
7. Model does not complete second full circle at same crossover point as finish of first circle.
8. Does not finish on same heading as entry.
9. Does not finish at same altitude as entry.

10. Does not straight and level to complete maneuver.

Inside Loop (one or three): The model starts the maneuver flying straight and level, then pulls up into a smooth, round loop. Class 11 & 111 perform a second and third loop in exactly the same path with a straight and level recovery to finish. The maneuver may be downgraded because:

1. Loops not round and smooth.
2. Entry not level.
3. Loops deviate left or right.
4. Finish of loops not at same altitude as entry.
5. Model pauses between loops.
6. Recovery not at same altitude as entry.
7. Recovery not level.

Axial Rolls (one or three): The model enters from a straight and level flight and rolls on its axis either to the left or right until 1 or 3 rolls are performed. The recovery must be on the same heading and altitude as the entry. The consecutive roll maneuver should be downgraded for the following:

1. Model not level at the start of the rolls.
2. Changes in heading.
3. Roll rate not uniform throughout.
4. Pauses between rolls.
5. The plane changes altitude during rolls.
6. The plane does not do exactly one (or three) roll(s).
7. The plane is not level at the end of the rolls.
8. The plane fails to do level flight at the end of the rolls.

Note: Class 1 may perform 1 barrel roll instead of 1 axial roll.

Reverse Cuban 8: Plane enters in straight and level flight, pulls up into a 45 degree climb, half rolls to inverted and proceeds to inside loop until it is again climbing at a 45 degree angle. Plane then does another half roll to inverted that should cross the flight path of the first half roll, then again proceeds to inside loop until it has reached straight and level flight on the same heading and altitude as the beginning. Maneuver shall be downgraded for the following:

1. Entry not straight and level.
2. First roll not on 45 degree line.
3. Loop not round or deviates to left or right.
4. Second roll not on 45 degree line.
5. Middle of second roll does not cross middle point of first roll.
6. Second loop not round or deviates to left or right.
7. Second loop not at same altitude as first loop.
8. Second loop not same size as first loop.
9. Maneuver not completed at same altitude and on same heading as beginning.
10. Model fails to do level flight at end of maneuver.

Immelman turn: The model starts Immelman flying straight and level, pulls up into half loop followed by a half roll and finishes flying straight and level exactly 180 degrees from the heading at entry. The Immelman may be downgraded because:

1. Model not level at start.
2. Model deviates left or right during half loop.
3. Half loop not completed exactly above point of commencement of half loop.
4. Half roll does not commence immediately after half loop.
5. Plane deviates from straight line during roll.
6. Model does not finish in level flight.
7. Model does not finish exactly opposite the direction of entry.

Stall Turn: The model starts from straight and level flight and noses up to a vertical position, yaws through 180 degrees, then dives along a parallel path and finishes the maneuver with the plane level at the same altitude as entry. The Stall turn may be downgraded because:

1. Model not level at start.
2. Does not become exactly vertical.
3. Turns left or right during pull up.
4. Does not yaw tightly through 180 degrees.

5. Return path more than two wingspans from entry path.
6. Return path not parallel to entry path.
7. Maneuver not finished at same altitude as entry.
8. Plane not level at finish of maneuver.
9. Model does not fly straight and level to complete maneuver.

Wingover: (Class 1 only) 180 degree change in direction, with level recovery at same altitude as entry.

1. This is a "fly through" maneuver, not a vertical pull and pivot as in the stall turn.

Inverted Pass: The model should be brought parallel to the runway, begin the maneuver with a straight and level entry, then half rolls to inverted flight. The inverted segment should be approximately 300 feet in length, followed by another half roll. The maneuver is completed with a straight and level exit. The Inverted pass may be downgraded because:

1. Model not straight and level at entry.
2. Half roll not 180 degrees.
3. Model deviates from straight course during half roll.
4. Changes in heading or altitude during inverted flight.
5. Inverted flight segment not centered.
6. Second half roll not 180 degrees.
7. Model does not return to straight and level upright flight after second half roll.

One Outside Loop: The model commences the outside loop flying straight and level, then noses down into an outside loop and recovers flying straight and level on the same heading and altitude as entry.

The outside loop is downgraded in the same manner as the inside loops.

Note: Contestant may choose to perform a reverse outside loop at their discretion.

Three Turn Spin: The plane establishes a heading by flying straight and level, pulls up into a stall and commences the spin through one, two, three turns and recovers to level flight on the same heading as the initial flight direction. The spin may be downgraded because:

1. Initial heading is not level.
2. Commencement of the first spin is sloppy or uncertain.
3. Does not do exactly three turns. Less than two or more than four turns should be scored a zero.
4. Does not recover on same heading as initial heading.
5. If any of the three turns are spiral dives rather than spins, the score is zero.
6. Rate of rotation in spin is excessively rapid.
7. Does not finish level.
8. Does not straight and level (for at least 50 feet) upon recovery.

Rolling 8: One inside loop followed by a half roll immediately followed by another inside loop followed by a half roll. Maneuver creates a vertical eight with one loop above and one loop below the entry-recovery axis. The Rolling 8 may be downgraded because:

1. Initial heading not level.
2. Loop not round or deviates to the left or right.
3. Half roll not immediately after loop.
4. Change in heading or altitude during half roll.
5. Second loop does not commence immediately after completion of half roll.
6. Second loop not round or deviates to the left or right.
7. Half roll not immediately after second loop.
8. Recovery not at same heading and altitude as entry.

Split "S": Half roll to inverted flight followed by an immediate half loop back to level flight. Model should lose altitude and make a 180 degree change in heading. The Split "S" may be downgraded because:

1. Model not level at entry.
2. Half roll loses heading or altitude.
3. Half loop does not commence immediately after completion of half roll.
4. Half loop not round or deviates to left or right.
5. Recovery not exactly 180 degrees from entry heading.
6. Model not level at recovery.

Touch and Go: After a smooth and gradual descent on a straight line path into the wind, the model lands and slows down to taxi speed (approximately $\frac{1}{4}$ the normal flight speed) but must not stop. Following this the model must accelerate and take off on the same heading as the entry. The maneuver may be downgraded for the following:

1. Approach during landing is too steep.
2. Gallops in pitch, yaw or roll during approach.
3. Model impacts or thuds onto the ground due to a lack of flare out.
4. Model bounces on landing.
5. Model deviates left or right while rolling on ground.
6. Model fails to slow down to a distinct "taxi" speed.
7. Model stops on ground.
8. Changes in heading during take off run.
9. "Jumping" from the ground.
10. Retouching the ground after becoming airborne.
11. Too steep a climb angle.
12. Gallops in pitch, yaw or roll during climb.
13. Changes in heading during climb.
14. Dropping a wingtip.
15. Model is too far away to be seen clearly at any time during the maneuver.

Landing pattern: The rectangular approach is commenced with the model flying into the wind, a turn of 90 degrees away from the runway, a cross-wind leg, a second 90 degree turn, a downwind leg, a third 90 degree turn, a cross-wind leg, a fourth 90 degree turn and straight flight toward the point of touchdown. The maneuver is finished just prior to touchdown (six foot altitude). The landing approach may be downgraded because:

1. Legs of rectangle are not straight and perpendicular to each other.
2. The 90 degree turns are not smooth, precise and sharp.
3. Gallops in pitch, yaw or roll during approach.
4. Model climbs during approach.
5. Attempts to break out of pattern and go around again. Zero points.

Landing: At the conclusion of the final approach leg, the model continues to descend at a gradual rate and lands on the heading used in the final approach leg. After landing, the model must roll in a straight line and come to a complete stop. The landing should be downgraded if:

1. Approach during landing is too steep.
2. Gallops in pitch, yaw or roll during approach.
3. Model impacts or thuds onto the ground due to lack of flare-out.
4. Model bounces on landing.
5. Model turns left or right while rolling to a stop.
6. Landing is dead stick.
7. Model fails to make pronounced stop.
8. Model pitches over and makes ground contact with nose or wingtip.
9. If model flips over on its back or cartwheels on wings- Zero points.