Sportsman (401)

Maneuver Descriptions

And

Suggested Downgrades

2020-2021

Purpose: The purpose of this guide is to furnish an accurate description of each maneuver of the Sportsman (401) pattern sequence. Study of this guide by the competitor will help him learn exactly what is expected, while study by the judges will help them decide precisely how well the competitor meets these expectations. The competitor or judge should refer to the AMA Judge's Guide for general information regarding downgrades such as the "One Point per 15 degree Rule". All maneuvers must have a level entry and exit.

Also note that the following general statements apply.

- Turnaround maneuvers are never required to exit at the same altitude as the entry.
- Turnaround maneuvers are always required to be exited on a track that is a reciprocal heading (180 degrees) to the entry track.
- Center maneuvers will always exit at the same track as the entry track.
- Unless specifically stated otherwise, all maneuver geometry is to be judged by track.
- The only portions of maneuvers where track does not apply are the entries to the stall turn and the spin.
- Although the 15 degree rule applies universally, judges are expected to be more critical of horizontal and vertical tracks than those at off angles, such as 45 degree lines.
- Start of the takeoff, landing and box entry must be called out by the competitor or his caller to avoid downgrades. There is no downgrade for not calling takeoff and landing completions or box exit.

Sequence: Below is the listed sequence for Sportsman. U, D, and T represent Upwind, Downwind and Turnaround, respectively.

Sportsman Sequence

Maneuver	**KF**
1. Takeoff Sequence (U)	1
ENTER BOX	
2. Straight Flight Out (U)	1
3. Half Reverse Cuban Eight (T)	2
4. Straight Flight Back (D)	1
5. Immelmann Turn (T)	2
6. 45 Degree Downline (U)	1
EXIT BOX (upwind-free turnaround) ENTER BOX (going downwind)	
7. One Horizontal Roll (D)	1
8. Stall Turn without rolls (T)	2
9. 45 Degree Up line (U)	1
10. Split "S" (Half roll, half loop from top) (T)	2
11. Double Immelmann without rolls (D)	2
EXIT BOX (downwind-free turnaround) ENTER BOX (going upwind)	
12. Two Inside Loops (U)	2
13. Half Reverse Cuban Eight (T)	2
14. Two point (2 of 2 point) roll (D)	2
15. Half Cuban Eight (T)	2
16. Triangular Loop, non-rolling (from bottom) (U)	3
EXIT BOX	
17. Landing Sequence (U)	1
Total K-factor	**28**

Maneuver Descriptions:

1. **Takeoff Sequence (U):** The takeoff maneuver will be scored in half-point increments from 10 to 0. The model is smoothly accelerated to takeoff speed. When flying speed is reached, it gently lifts off the ground and climbs at a gradual angle. The lift off should be within one meter of center for maximum points (measured as one meter each side of center as defined by the center pole). The aircraft must not deviate in track during takeoff but may change heading after liftoff to maintain a straight track with the takeoff roll. The maneuver is complete when the model is approximately 2 meters (6 ½ feet) from the ground.

   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.

   Downgrades:

   - Model jumps from the ground.
   - Lift off is not within one meter each side of center.
   - Model retouches the ground after becoming airborne.
   - Steep climb angle.
   - Gallops in elevation during climb.
   - Wings not level.
   - Throttle not smoothly advanced.
   - Track not maintained through completion of maneuver (6 1/2 feet from the ground).
   - Failure to call the start of the maneuver.
   - Model passes behind the judge's line, scored 0 points.

2. **Straight Flight Out (U):** From upright, fly a straight line parallel to the flight path for a distance of approximately 100 meters centered on the judges before starting the turnaround maneuver (distance does not have to be accurate).

   Downgrades:
   - Track of plane deviates left or right. Apply "One Point per 15 Degree Rule".
   - Does not hold constant altitude.
   - Gallops in yaw, roll, or pitch.

3. **Half Reverse Cuban Eight (T):** From upright**,** pull a 1/8 inside loop to a 45 degree up line, hesitate, perform a ½ roll, hesitate, perform a 5/8 inside loop to exit upright.

   Downgrades:

   - Loop segments not round and of equal radius.
   - Model not at 45 degrees before and after half roll. Apply "One Point per 15 Degree Rule".
   - Changes in track in loop segments or after half roll.
   - Half roll not centered in 45 degree line.
   - No hesitations before or after half roll.
   - Over or under rotation of roll. Apply "One Point per 15 Degree Rule".

4. **Straight Flight Back (D):** Immediately following the turnaround maneuver, fly back along the same line as the outgoing path. "Straight Flight Back" need not be at same altitude as "Straight Flight Out".

   Downgrades:

   - Track of plane deviates left or right. Apply "One Point per 15 Degree Rule".
   - Does not hold constant altitude.
   - Gallops in pitch, yaw, or roll.
   - Return path not parallel to the flight path.

5. **Immelmann Turn (T):** From upright, pull a ½ inside loop immediately followed by a 1/2 roll to exit upright in the opposite direction as entry at a higher altitude.

   Downgrades:

   - Model not level at start or finish.
   - Model deviates left or right during half loop.
   - Half loop not completed exactly above point of commencement of half loop.
   - Half roll does not commence immediately after half loop.
   - Plane deviates from a straight line during roll.
   - Over or under rotation of roll. Apply "One Point per 15 Degree Rule".

6. **45 Degree Down line (U):** From upright, push a 1/8 outside loop to a 45 degree down line, hesitate, pull a 1/8 inside loop to exit upright at a lower altitude. The center of this maneuver is the mid-point of the 45 degree line. There is no length requirement for the 45 degree line.

   Downgrades:

   - Loop segments not round and of equal radius.
   - Downline path not 45 degrees. Apply "One Point per 15 Degree Rule".
   - 45 degree line not centered.
   - Track changes during 45 degree line.
   - Changes in track during loop segments.

7. **One Horizontal Roll (D):** From upright, perform a roll at a uniform rate through a complete revolution in either direction to exit upright. Center is the inverted portion of maneuver.

   Downgrades:

   - Changes in track during roll.
   - Changes in altitude during roll.
   - Roll rate not constant.
   - Roll not centered.
   - Model does not perform exactly one roll. Apply "One Point per 15 Degree Rule".

8. Stall Turn without Rolls (T): From upright, pull a ¼ inside loop to a vertical up line, hesitate, perform a stall turn through 180 degrees to a vertical down line, hesitate, pull a 1/4 inside loop to exit upright. Exit altitude of maneuver need not be the same as entry altitude.

   Downgrades:

   - 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 and of equal radius.
   - Forward or backward flop 0 pts.

9. **45-Degree Up line (U):** From upright, pull a 1/8 inside loop to a 45 degree up line, hesitate, push a 1/8 outside loop to exit upright at a higher altitude. The center of this maneuver is the mid-point of the 45 degree line. There is no length requirement for the 45 degree line.

    Downgrades:

    - Loop segments not round and of equal radius.
    - Up-line path not 45 degrees. Apply "One Point per 15 Degree Rule".
    - 45 degree line not centered.
    - Track changes during 45 degree line.
    - Changes in track during loop segments.

10. **Split "S" (T):** from upright, perform a ½ roll, then immediately pull a 1/2 inside loop to exit upright in the opposite direction as entry but at a lower altitude.

    Downgrades:

    - Half roll not 180 degrees. Apply "One Point per 15 Degree Rule".
    - Half loop not started immediately after half roll.
    - Half loop not constant radius.
    - Changes in track.
    - One-half (1/2) roll not in level flight.
    - Model track does not finish exactly opposite the direction of entry.
    - Wings not level during looping segment.

11. **Double Immelmann without Rolls (D):** From upright pull a ½ inside loop to level inverted flight, hesitate, pull a 1/2 inside loop to exit upright at the entry altitude. The horizontal legs should be equal to the diameter of the half loops. The first one half (1/2) loop is initiated at a distance of one half (1/2) the loop diameter past the centerline.

    Downgrades:

    - Half loops not of constant and of equal radius.
    - Half loops not completed exactly above or below point of commencement of half loops.
    - Changes in track during half loops and lines.
    - Entry and exit not at same altitude.

12. **Two Inside Loops (U):** From upright, pull 2 consecutive inside loops to exit upright. Both loops shall be round and superimposed.

    Downgrades:

    - Loops not round.
    - Loops not superimposed.
    - Wings not level during loops.
    - Changes in track during loops.
    - Exit not at same altitude and track as entry.

13. **Half Reverse Cuban Eight (T):** From upright, pull a 1/8 inside loop to a 45 degree up line, hesitate, perform a 1/2 roll, hesitate, pull a 5/8 inside loop to exit upright.

    Downgrades:

    - Loop segments not round with the same size and radius.
    - Model not at 45 degrees before and after half roll. Apply "One Point per 15 Degree Rule".
    - Changes in track in loop segments or after half roll.
    - Half roll not centered in 45 degree line.
    - No hesitations before or after half roll.
    - Over or under rotation of roll. Apply "One Point per 15 Degree Rule".

14. **Two Point (2 of 2 point) Roll (D):** From upright, perform a ½ roll to level inverted flight, hesitate, perform a second 1/2 roll in the same direction to exit upright. Center of maneuver is the middle of inverted hesitation. Length of the inverted hesitation is not a reason for downgrade if it has a visible length.

    Downgrades:

    - Model does not hesitate at inverted.
    - Roll rate not constant.
    - Over or under rotation of rolls. Apply "One Point per 15-Degree Rule".
    - Change in altitude.
    - Changes in track.
    - Roll rates not constant.

15. **Half Cuban Eight (T):** From upright, pull a 5/8 inside loop to a 45 degree down line, hesitate, perform a 1/2 roll, hesitate, pull a 1/8 inside loop to exit upright.

    Downgrades:

    - Loop segments not round and of equal radius.
    - Model not at 45 degrees before and after prescribed roll.
    - Changes in track during loop segments or after prescribed roll.
    - Prescribed roll not on center of 45 degree line.
    - No hesitations before or after prescribed roll.
    - Over or under rotation of roll. Apply "One Point per 15 Degree Rule".

16. **Triangle Loop non rolling (from bottom) (U):** From upright, at center, pull through a 1/8 loop to a 45-degree up track, hesitate, pull through a 3/8 loop to level inverted flight, hesitate, pull through a 3/8 loop to a 45-degree down track, hesitate, pull through a 1/8 loop to exit upright.

    Downgrades:

    - Loop segments not round and of equal radius.
    - Up and downline path not 45 degrees. Apply "One Point per 15 Degree Rule".
    - Up and downlines not of equal length.
    - Wings not level during loop segments.
    - Changes in track during loop segments.
    - Apex of triangle not centered.
    - Exit not at same altitude and track as entry.

17. Landing Sequence (U): The landing maneuver will be scored in half point increments from 10 to 0. The maneuver will start two (2) meters from the ground. The model flares smoothly to a nose high altitude, dissipating flying speed, and then smoothly touches the ground, within the landing zone. The maneuver should be considered complete once the plane has slowed below flying speed and rolled 10 meters or comes to a stop and no further downgrades shall be applied after that point.

The landing zone shall be marked by lines placed perpendicular across the runway and spaced 30 meters apart. The width of the landing zone is normally the width of the runway but in no case shall exceed 30 meters. Landing is not a centered maneuver and there is no downgrade for displacement of the touchdown point left or right from center as long as the landing is in the landing zone. If the touchdown is within the runway but not in the landing zone it should be downgraded proportionate to the distance outside the landing zone. The Contest Director may designate any landing zone appropriate to the field if safety considerations dictate. If the landing zone is anything other than standard it should be thoroughly discussed with the pilots and judges before flying is started and no downgrade shall be applied due to the touchdown in the non-standard landing zone.

The landing will not be downgraded if:

- 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.
- The model rolls to a controlled stop within 10 meters.
- Displacement of touchdown point left or right as long as the landing is in the landing zone.

Downgrades:

- Model passes behind the judges' line - 0 points.
- Model impacts the runway due to lack of flare.
- Model bounces.
- Changes in track.
- Model ends on its back - 0 points.
- Model lands outside landing zone.
- If any undercarriage retracts before the landing is complete - 0 points.
- Aircraft "porpoises" and or wanders during approach or flare.
- Aircraft lands outside the landing area or runway - 0 points.
- Aircraft touches down while not straight to runway and ground track.
- Failure to call beginning of maneuver.