

NSRCA “Club or Novice Class”

Maneuver Descriptions

And

Suggested Downgrades

August 18, 2016

**Purpose:** The purpose of this guide is to furnish an accurate description of each maneuver of the NSRCA “Club or Novice Class”. This class is intended to be used by pattern contest CDs as a way of encouraging club sport flyers to come out to a pattern contest and be able to compete with their airplanes against their club mates. This class can be flown by any reasonably powered sport airplane. 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.

- 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
- 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 and landing must be called out by the competitor or his caller to avoid downgrades. There is no downgrade for not calling takeoff and landing completions.

# Flying the Club Class Pattern

The following guide will describe the maneuvers and downgrades. Here how to setup each maneuver.

- (U) means the maneuver will be flown Up Wind
- (D) is a Down Wind maneuver
- (T) means Turnaround and the maneuver will be done off center out near one of the 60 degree lines marked on the runway
- After takeoff you have a chance to make a trim pass to insure the model is in trim. Make the takeoff and fly out in the direction of takeoff far enough to allow you to do a turnaround and fly downwind with sufficient time to get the model in trim.
- Now the model is in trim. Again, do a 180 degree turn to do the first maneuver into the wind (U). Up Wind means the model is starting the maneuver in the direction of takeoff.
- Maneuvers 2 through 4 are a set that has an Up Wind start, a Turn Around, and a Down Wind finish. All 3 are judged. Do the Straight Flight Out starting before center and long enough to finish well past center. For the Procedure Turn, do a 90 degree turn away from the runway and then a 270 degree turn in the opposite direction to make the Straight Flight Back proceed along the same line as straight flight out.
- Once you have finished the fourth maneuver, Straight Flight Back (D), do some turnaround that will position the model for the next maneuver into the wind or the direction of takeoff.
- A Stall Turn is a pull into a vertical line, slow the model until you can apply rudder and the model will pivot around and proceed down the same line it went up. Do this maneuver somewhere after center (the line on the runway in the center). That will give you a better view of the airplane as it climbs.
- After the Stall Turn do some turnaround and fly downwind to the other end of the field. Turn around again and position the plane for the next maneuver, the Immelmann Turn. It can be done either starting the half loop at center or somewhere after center.
- Again make 2 turnarounds so you are oriented into the wind to fly the 45 Upline.. Try to do this so halfway up the line you are crossing the center line.
- Proceed out and do a turnaround to setup for the downwind Straight Inverted Flight. Somewhere before center roll the model to inverted and fly a line long enough to demonstrate controlled inverted flight. Try to position the line so the center is at the center strip on the runway.
- Turn around and position for the Two inside loops. It will probably be easier to fly the loops at center so you have the center strip to help position the loops.
- Turnaround to setup downwind for the landing sequence.

**Sequence:** Below is the listed sequence for NSRCA Club Class. U and D represent Upwind and Downwind, respectively. (The Procedure Turn is the only scored turnaround maneuver)

### **Club Sequence**

- |     | <b>Maneuver</b>              |
|-----|------------------------------|
| 1.  | Takeoff Sequence (U)         |
| 2.  | Straight Flight Out (U)      |
| 3.  | Procedure Turn (T)           |
| 4.  | Straight Flight Back (D)     |
| 5.  | Stall Turn without Rolls (U) |
| 6.  | Immelmann Turn (U)           |
| 7.  | 45 Degree upline (U)         |
| 8.  | Straight Inverted Flight (D) |
| 9.  | Two Inside Loops (U)         |
| 10. | Landing Sequence (U)         |

## 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) The aircraft must not deviate in track during takeoff but will change heading after liftoff to maintain a straight track with the takeoff roll. The maneuver is complete when the model is approximately 2 meters (6-1/2 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
- Model gallops in elevation during climb
- Track not maintained through completion of maneuver
- Wings not level at any time
- Throttle not smoothly accelerated
- Model passes behind the judge's line, scored zero (0) points
- Failure to call start of maneuver

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
- Does not hold constant altitude
- Gallops in yaw, roll, or pitch

3. **Procedure Turn (T):** Immediately after the Straight Flight Out the model must turn exactly 90 degrees to the right or left, (whichever will take the plane away from the runway/zero line) then exactly 270 degrees to the left (or right) and cross over the point where the first turn commenced.

Downgrades:

- First turn not 90 degrees
- Second turn not 270 degrees
- Changes in altitude during turn
- Turns not smooth and circular
- Does not head back over exact outgoing path

4. **Straight Flight Back (D):** Immediately following the procedure turn, fly back along the same line as the outgoing path.

Downgrades:

- Track of plane deviates left or right
- Does not hold constant altitude
- Gallops in pitch, yaw, or roll

5. **Stall Turn without Rolls (U):** From upright, fly past center, pull a  $\frac{1}{4}$  inside loop to a vertical upline, hesitate, perform a stall turn through 180 degrees to a vertical downline, hesitate, pull a  $\frac{1}{4}$  inside loop to exit upright in the opposite direction.

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  $\frac{1}{2}$  wingspan
- Pendulum movement after stall
- Loop segments not round with same size and radius

6. **Immelmann Turn (U):** From upright, pull a  $\frac{1}{2}$  inside loop immediately followed by a  $\frac{1}{2}$  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
- Model does not finish in level flight

7. **45-Degree Up Line (U):** From level upright flight model pulls and executes a one eighth (1/8) inside loop to a 45 degree up line, hesitates, performs a one eighth (1/8) outside loop to recover in upright level flight 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 or have the same 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

8. **Straight Inverted Flight (D):** From upright, perform a ½ roll to level inverted flight, fly straight and level inverted for a minimum of 4 seconds, perform a second ½ roll to exit upright.

Downgrades:

- ½ rolls not level
- Roll rate not constant
- Over or under rotation of rolls. Apply “One Point per 15-Degree Rule”.
- Change in altitude
- Changes in track

9. **Two Inside Loops (U):** From upright, pull 2 consecutive inside loops to exit upright. All 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

10. **Landing Sequence (U):** The landing maneuver will be scored in one half (1/2) point increments from 10 to 0. The maneuver will start two (2) meters from the ground. The model flares smoothly, 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 it 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 nonstandard 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 judge’s 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
- 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
- Failure to call beginning of maneuver