Ballito RC Club

Introduction to Aerobatics

TIPS AND TECHNIQUES SEQUENCE 1 OF 2

Flying Lines

The first and most important lesson to learn when starting out in aerobatics, is to be able to fly “lines”. This is vital when performing a sequence of figures in both aerobatics as well as when flying jets or scale aeroplanes.

What does flying lines mean ? It means at all times to be able to fly the plane parallel to the flightline (in most cases the runway), as well as fly lines perpendicular to the runway. In aerobatic figures there are also vertical lines as well as 45 degree lines.

Why is being able to fly lines so important ? Simple – figures flow from 1 to the next so being off line after figure 1 means figure 2 starts badly and invariably it just gets worse as you go from figure to figure. Also, judging of the figure starts from the line so if you are 20 degrees off heading when you enter, you already have 2 points deducted (1 point for each 10 degree error).

So spend the time learning to control the aeroplane rather than the aeroplane control you, and practice flying the lines until it becomes second nature to do so.

Judging Criteria

When starting a figure, a pilot starts with a full 10 points. For each error found by the judge, they will deduct points or parts of a point for every error seen. For each 5 degree error/deviation, the judge will deduct 0.5 points and for each 10 degree error, 1 full point is deducted. There is no negative scoring, so you can never score less than 0 for a figure. If you fly a 60 degree upline instead of a 45 degree upline, you will be downgraded 1.5 points.

The point total for the figure is recorded by the judges. Because no 2 figures are equal in terms of difficulty, each figure is given a difficulty factor (K factor). The higher the K factor the more difficult the figure, and the more the figure will contribute to your overall total score.

Tips for each Figure

1. Inside Loop

The loop is judged mainly on it's shape. It must be perfectly round, not egg shaped or oval. This implies that the entry height and exit height would need to be the same. Downgrades also occur for drift laterally (corkscrew) as well as flying flat spots or changes in radii.
There is no minimum or maximum size for the loop.

2. Half Cuban

As in the loop above, the figure is started with a 5/8 loop until you reach a 45 degree down line. On the 45 degree downline, you will perform a ½ roll. Downgrades here include the 45 degree line being too steep or shallow. Also judged are the lines before and after the roll. The roll needs to be in the centre of the 45 line. This means the line flown before the ½ roll and the line flown after the ½ roll and before the pull to level, must be the same length. The roll must stop with wings level, any deviation on this will result in downgrades.

3. Hammer Head / Stall Turn

Starting with wings level, pull to a vertical up line. Downgrades will be for the vertical being too positive or negative. This is important, as the stall turn will not be able to be executed correctly if the plane is not perfectly vertical.
The length of the vertical line is at the pilots discretion and is not a judging criteria.
The plane must then execute the stall turn and pivot 180 degrees and fly a vertical downline.
During the stall turn, the plane must not slide backwards and must not be "flown over". Flown over means the plane flies a 180 degree turn rather than pivots on it's own axis. Excessive flying over will result in a zero for the figure.
Again, the downline must be vertical and any deviation will incur a downgrade. The length of the upline and the length of the downline, need not be the same.

4. 360 Degree Aerobatic Turn

While on line, the plane must be sharply rolled to at least a 60 degree bank angle. The plane will then be flown a full 360 degrees followed by a sharp roll to return the plane to wings horizontal.
Downgrades begin with "lazy" rolls to the bank angle. Any changes in bank angle or height gain or loss, is also downgraded. A "lazy" roll back to wings level is also downgraded. The exit roll will need to be timed correctly so that the wings are level and the roll finished with the plane perfectly aligned to the flightline. Early or late roll outs will incur penalties as well as wings not ending up horizontal.

5. Humpty Bump

Starting with wings level, pull to a vertical up line. Downgrades will be for the vertical being too positive or negative. The length of the vertical line is at the pilots discretion and is not a judging criteria.

The plane must then execute a ½ loop and fly a vertical downline. The radius of the ½ loop is at the pilot's discretion and can be made as big or as small as needed. Wings must be kept level at all times to avoid downgrades. Pilots generally use this figure to get themselves back on the right line by adjusting the radius to better re-position the plane (especially when flown perpendicular to the flightline in the higher classes).

Again, the downline must be vertical and any deviation will incur a downgrade. The length of the upline and the length of the downline, need not be the same.