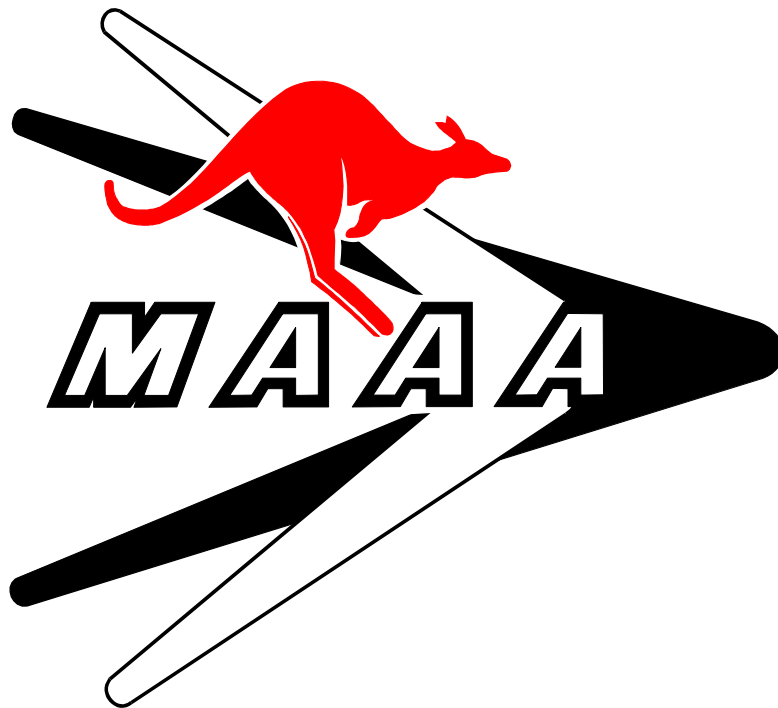


***MODEL AERONAUTICAL ASSOCIATION  
of AUSTRALIA Inc.***



**AUSTRALIAN OFFICIAL RULES**

**Section 9 - R/C Helicopter Rules**

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# **1 R/C Helicopter Grading System**

## **1.1 Grades of Competition**

The grades of competition are:

Expert

Advanced

Novice

Expert will fly the F3C schedule of manoeuvres

Advanced will fly the MAAA Advanced schedule of manoeuvres.

Novice will fly the MAAA Novice schedule of manoeuvres.

All manoeuvres will be judged using the F3C criteria or equivalent when the exact manoeuvre is not part of the F3C schedule.

## **1.2. Competitor promotion to a higher level.**

Having been placed as a winner of the event at a National Championship competition, promotion from Novice or Advanced will be automatic.

A pilot who has won or placed at State Championship level may elect to fly in the next higher grade at a National Championship.

A new competitor may elect to fly in any grade level at his first National Championship Competition.

A competitor may elect to fly at the next lower level if the competitor has never won a National Championships at the lower level or having won, has not competed in any State or National level for at least three years.

## **1.4 Downgrades applying to all Novice and Advanced Manoeuvres**

If a manoeuvre is unrecognisable the score shall be zero (0) points.

Ascents from, and descents to, the helipad must be vertical and without pauses (unless specified otherwise). Landings must be smooth and centred on the helipad.

During the hovering manoeuvres all stops must be of 2 seconds minimum duration (unless specified otherwise).

Circular and linear hovering segments must be executed at a constant speed.

Every pirouette, or part pirouette, must be performed at a constant turning rate.

The competitor must stand in the 2 m diameter circle 9 m from the helipad as indicated in Novice manoeuvre N1.

## **1.5 Additional downgrades applying to all Advanced Manoeuvres**

The hovering manoeuvres must be started with the nose of the model aircraft facing left or right and must be flown as a unit (the starting heading must be the same for each hovering manoeuvre).

All aerobatics manoeuvres must start and end in the direction indicated with a straight and level flight line of 10 m minimum length.

Entry and exit for all aerobatic manoeuvres must be at the same altitude and heading (unless specified otherwise).

During all aerobatics manoeuvres the competitor must maintain his model aircraft above a minimum altitude of 10 m.

Aerobatics manoeuvres must be performed within the 120° horizontal field of view of the pilot and must be symmetrical about the centre line.

Aerobatic manoeuvres flown at a distance greater than 100 m from the judges' line will be downgraded.

## 2 MAAA Novice Schedule of Manoeuvres

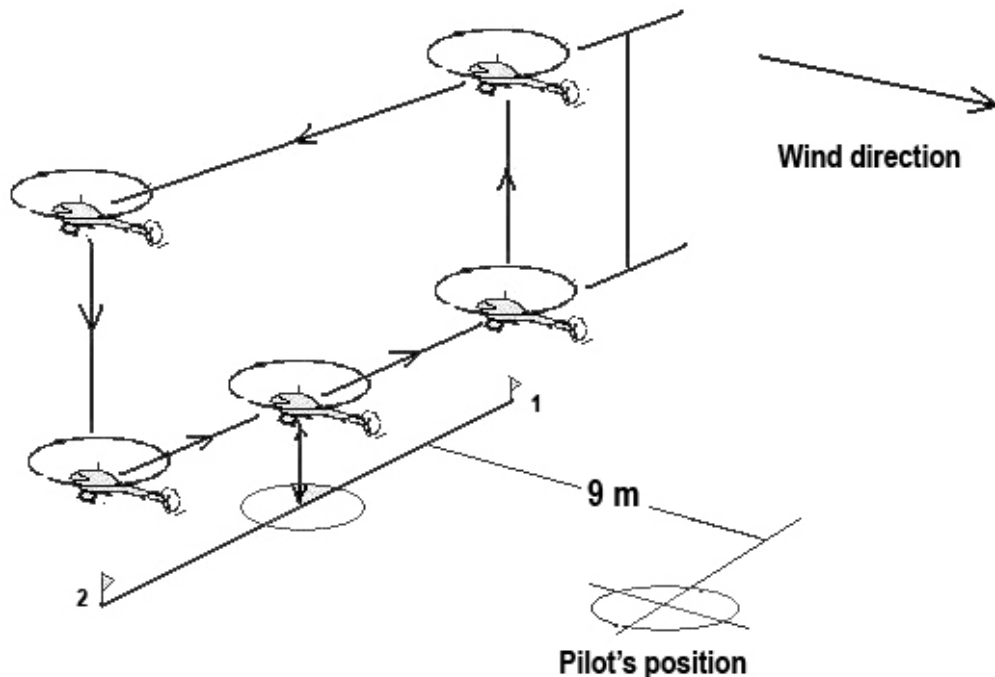
All manoeuvres must be completed in the following order:

- N1. Constant Heading Vertical Rectangle
- N2. Constant Heading Vertical Triangle
- N3 Constant Heading Vertical Circle
- N4 Constant Heading Vertical Diamond
- N5. Quarter and half pirouette
- N6. Descent and Landing.

### 2.1 Schedule N

#### N1 Constant Heading Vertical Rectangle

Model takes off from central helipad and ascends vertically to skids at eye level and stops. Model then flies sideways to a point directly above one of the flags (1 or 2) and stops. Model then climbs vertically 4 m and stops. Model then flies sideways 10 m to a point directly above the opposite flag and stops. Model then descends 4 m to skids at eye level and stops. Model flies sideways to a point directly over the central helipad and stops. Model then descends to a landing on the central helipad.

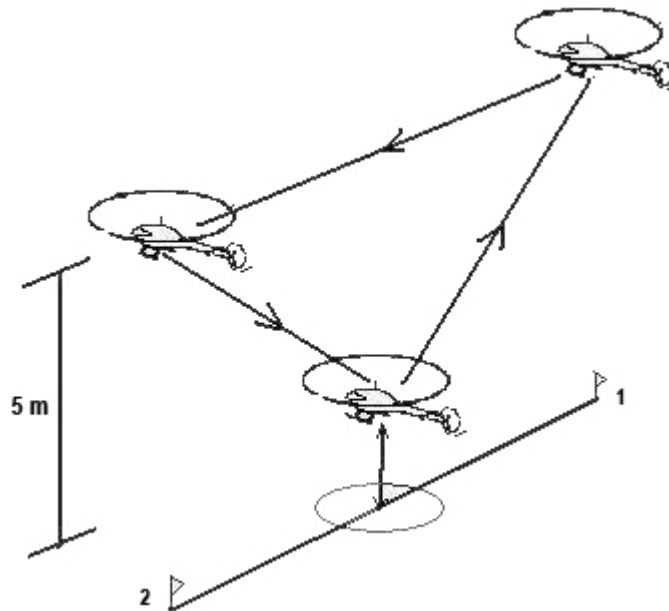


Points will also be deducted for the following reasons:

- 1. Model did not maintain a constant heading.
- 2. Horizontal line is not horizontal
- 3. Vertical line is not vertical

## N2 Constant Heading Inverted Vertical Triangle

Model takes off from central helipad and ascends vertically to skids at eye level and stops. Model then climbs sideways at 45 degrees to an altitude of 5 m above eye level directly over one of the flags (1 or 2) and stops. Model then flies sideways 10 m to a point directly above the opposite flag and stops. Model then descends sideways at 45 degrees to skids at eye level directly over the central helipad and stops. Model then descends to a landing on the central helipad.

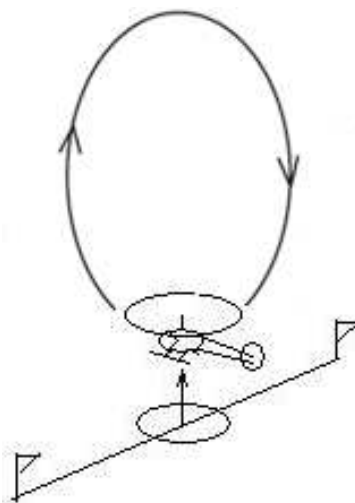


Points will also be deducted for the following reasons:

1. Ascent and / or descent was not 45 degrees.
2. Horizontal line is not horizontal
3. Model did not maintain a constant heading.

## N3 Constant Heading Vertical Circle

Model takes off from central helipad and ascends vertically to skids at eye level and stops. Model then flies an ascending vertical full circle (5 m diameter) round to a point directly over the central helipad and stops. Model then descends to a landing on the central helipad.

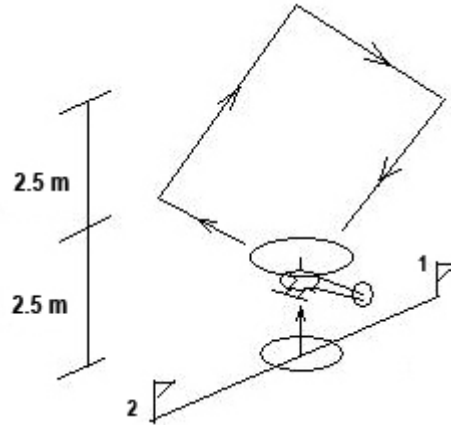


Points will also be deducted for the following reasons:

1. Shape of circle was not round.
2. Model did not maintain a constant heading.

#### N4 Constant Heading Vertical Diamond

Model takes off from central helipad and ascends vertically to skids at eye level and stops. Model then climbs sideways from the central helipad to a point directly above one of the flags (1 or 2), 2.5 m above eye level and stops. Model then climbs sideways to an altitude of 5 m above eye level directly over the central helipad and stops. Model then descends sideways to a point directly above the opposite flag (2 or 1), 2.5 m above eye level and stops. Model then descends sideways to skids at eye level directly over the central helipad and stops. Model then descends to a landing on the central helipad.

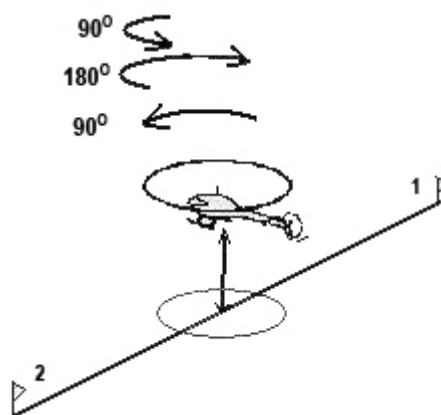


Points will also be deducted for the following reasons:

1. Model ascent and descent paths are not linear.
2. Model did not maintain a constant heading.

#### N5 Quarter and half pirouette

Model takes off from central helipad and ascends vertically to skids at eye level and stops. The model then turns 90 degrees to the left or right as elected by the pilot. Then without pausing turns 180 degrees (with the tail turning towards the pilot) until the model faces the opposite direction. The helicopter then without pausing turns 90 degrees until the model is once again tail in to the pilot and pauses. Model then descends to a landing on the central helipad. For the entire manoeuvre the model is to maintain a position over the centre helipad.



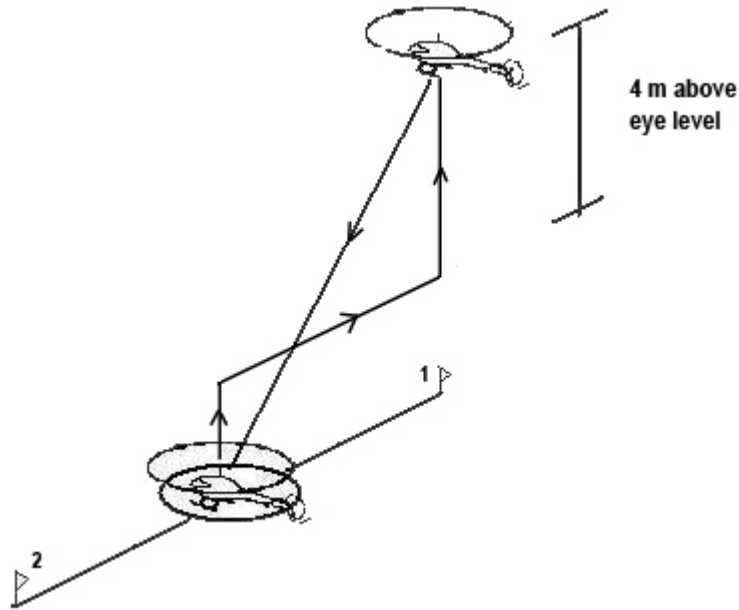
Points will also be deducted for the following reasons:

- 1 The main shaft of the model drifts away from the centre line of the helipad.
2. Helicopter fails to 'pirouette' to a position 90 degrees to the pilot.

### N6 Sideways descent and landing

Model takes off from central helipad and ascends vertically to skids at eye level and stops.

Model then flies sideways to a point directly above one of the flags (1 or 2) and stops. Model then climbs vertically 4 m and stops. Model then descends diagonally, to land in the central helipad.



Points will also be deducted for the following reasons:

1. Model descent path not linear.
2. Horizontal line is not horizontal
3. Vertical line are not vertical
4. Model did not maintain a constant heading.

### 3 MAAA Advanced Schedule of Manoeuvres

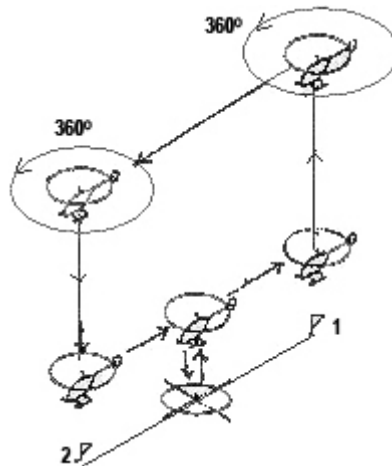
All manoeuvres must be completed in the following order:

- A1. Vertical Rectangle with 360 degree pirouettes
- A2. Vertical Triangle with 180 degree pirouettes
- A3. Vertical Circle
- A4. Inside Loop – Upwind / Upwind
- A5. Slow Roll – Downwind / Downwind
- A6. 1800 Stall Turn – Upwind / Downwind
- A7. Pushover – Upwind / Upwind
- A8.-Straight Line Auto

#### 3.1 Schedule A

##### A1 Vertical Rectangle with 360 degree pirouettes

Model takes off from central helipad and ascends vertically to eye level and stops. Model then flies backwards to one of the flags (1 or 2) and stops. Model then climbs vertically 4 m and stops. Model performs a 360 degree pirouette in either direction and stops. Model then flies forwards 10 m to opposite flag and stops. Model performs another 360 degree pirouette in either direction and stops. Model then descends 4 metres and stops. Model flies backwards to central helipad and stops. Model then descends to a landing on the central helipad.

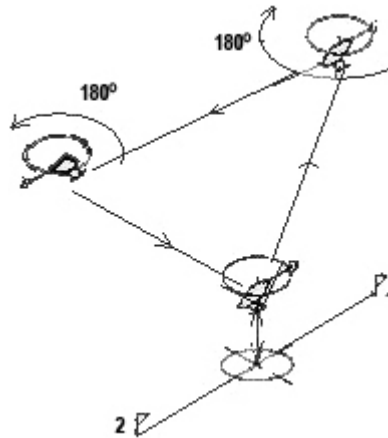


Points will also be deducted for the following reasons:

- 1. Model did not maintain a constant heading except during pirouettes.
- 2. Horizontal line is not horizontal
- 3. Vertical line is not vertical
- 4. Model did not maintain lateral position during pirouettes.

### A2 Vertical Triangle with opposite 180 degree pirouettes

Model takes off from central helipad and ascends vertically to eye level and stops. Model then climbs backwards at 45 degrees to an altitude of 5 m above eye level directly over a flag (1 or 2) and stops. Model performs a 180 degree pirouette in either direction and stops. Model then flies backwards 10 m to opposite flag and stops. Model performs a 180 degree pirouette in either direction and stops. Model then descends backward at 45 degrees to eye level directly over central helipad and stops and descends to a landing on the central helipad.



Points will also be deducted for the following reasons:

1. Ascent and / or descent was not 45 degrees.
2. Horizontal line is not horizontal
3. Model did not maintain a constant heading except during pirouettes.
4. Model did not maintain lateral position during pirouettes.

### A3 Vertical Circle

Model aircraft takes off vertically from central helipad and stops at eye level. Model flies forward into an ascending vertical full circle (5 m diameter) stopping over the helipad at eye level. Model then descends to a landing on the central helipad.

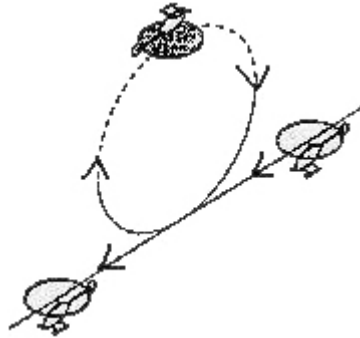


Points will also be deducted for the following reasons:

1. Shape of circle was not round.
2. Model did not maintain a constant heading.

#### **A4 Inside Loop - Upwind/Upwind**

Model flies straight and level for a minimum of 10 m then climbs for a loop while maintaining the nose in the direction of flight. The model ends the loop and flies straight and level.

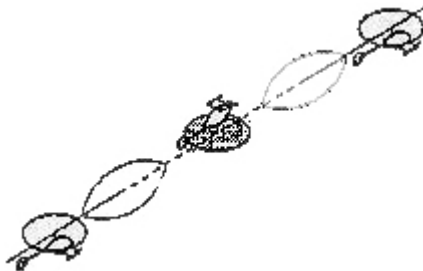


Points will also be deducted for the following reasons:

1. The loop is not round.
2. The model did not maintain the same heading throughout the manoeuvre.

#### **A5 Slow Roll - Downwind/Downwind**

Model flies straight and level for a minimum of 10 metres. At a constant altitude the model starts a slow roll in either direction around an axis which coincides with the line of flight. The model continues this roll in the same direction until it flies horizontally straight and level.

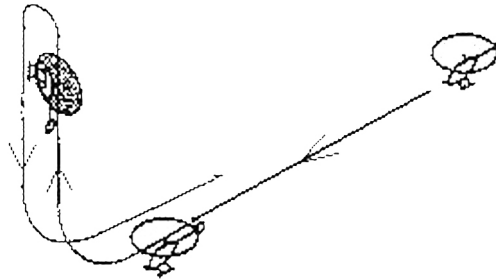


Points will also be deducted for the following reasons:

1. The roll should be a minimum duration of 3 seconds.
2. Roll must be executed at a constant roll rate.
3. The model finishes the manoeuvre on a different heading from that on which it started the manoeuvre.

### A6 180 degree Stall Turn - Upwind/Downwind

Model flies straight and level for a minimum of 10 m then climbs vertically with a smoothly rounded curve of 90 degrees. When the vertical climb stops the model turns 180 degrees around the yaw axis so that the nose points downward. While diving the model follows the same path as the climb and recovers to straight and level flight

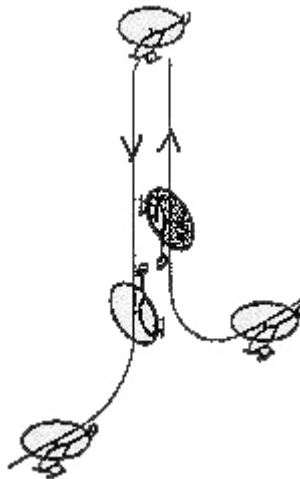


Points will also be deducted for the following reasons:

1. The model does not climb exactly vertical or does not end its vertical climb.
2. The model does not rotate exactly 180 degrees and oscillates before diving.
3. The 90 degree curves are of different radii.
4. The model does not finish the manoeuvre on a heading exactly 180 degrees to that on which it started the manoeuvre.

### A7 Pushover - Upwind/Upwind

Model flies straight and level for a minimum of 10 m then enters a 90 degree vertical ascent. When model comes to a stop nose of model is pushed forward 90 degrees to level and upright position and stops. Nose of model is then pushed over 90 degrees again to vertical (nose down) position followed by vertical descent and 90 degree pullout back to straight and level flight

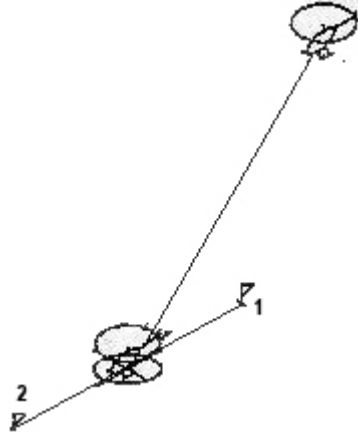


Points will also be deducted for the following reasons:

1. Vertical segments were not parallel.
2. Model drifted toward or away from the judges.
3. Pushovers were not 90 degrees.
4. The 90 degree curves are of different radii,

### A8 Straight Line Autorotation - Upwind

Model aircraft flies at a minimum altitude of 20 m. As the model crosses the line which descends at 45 degrees from the height of the model to the central helipad, the model aircraft must be in the autorotation state, the engine must be off at this point and the model aircraft must be descending. The descending rate must be constant from this point to a point just before touchdown on the helipad.



Points will also be deducted for the following reasons:

1. The descent rate is not constant.
2. Model descent path not linear.
3. Model did not maintain a constant heading.