

R/C Proficiency Programme

The "Wings" Programme for basic R/C Flight qualification.

From 1 September 2006 it will be compulsory for all members to have a Wings Badge qualification or when flying be under the direct supervision of a member who does.

1. Aim

- 1.1. To provide certification of a basic proficiency level for Radio Control model pilots enabling them to operate unsupervised. Pilots achieving the required level are entitled to wear the NZMAA 'Wings' badge.
- 1.2. To meet the requirements of Civil Aviation Rule 101 for flying within 4km of aerodromes.

2. Method

- 2.1. The NZMAA encourages all clubs to adopt this proficiency scheme and encourage all Radio Control pilots to obtain their "Wings".
- 2.2. Many club flying sites, rallies and contests are on or near aerodromes and this qualification is essential to fly at those sites. The badge provides ready proof of the minimum qualification.
- 2.3. Within 4km of an aerodrome trainee pilots must operate under direct supervision of a badge holder or an approved Instructor, and should not be considered safe to fly on their own until they have reached the wings standard. This procedure is also recommended for use away from aerodromes.

3. Examiners and Instructors

- 3.1. Examiners are to be proficient flyers, appointed by the club and would normally be an NZMAA approved instructor. Clubs must forward lists of approved instructors to the Secretary NZMAA for recording on the Association database. A booklet on Instructor requirements is available from the Secretary on request.

4. Qualification

- 4.1. There are six types of qualification:

S	Training/Vintage/Sport/Gliders	Low wing loading models
A	Pattern (Aerobatic) type. F3B gliders. Fan and Turbojet. Scale models with high wing loading.	Includes sport models of similar Wing loading.
F	Pylon. Speed.	
M	MANZ (Over 2m wingspan monoplanes & over 1.5m wingspan biplanes)	
L	Large models and pilotless vehicles as defined by CAA	Each pilot must qualify on each aircraft.
H	Helicopter	

5. Certification

- 5.1. The Wings badge and a laminated credit card sized Certificate of Proficiency, listing the type(s) of qualification, will be issued by the NZMAA. Applications must be made through Club Secretaries on the official form, signed by the examiner. There is a charge for the badge but the certificate or any alterations to the certificate will be free of charge.
- 5.2. The badge may have the club name at the top, the NZMAA wings in between, with the letters R/C in the centre, and the name of the pilot at the bottom. If specifically requested, the club name may remain blank.
- 5.3. All persons who qualified for their badge before October 1st 1997 may obtain an 'S' (or, if qualified on Helicopters, an 'H') rating certificate directly from the Secretary NZMAA on receipt of a stamped addressed envelope. For other ratings, application must be made through the Club Secretary on the official form.
- 5.4. The NZMAA will maintain a register of all certificate holders.
- 5.5. Certificates (and Badges) may be withdrawn by a club if the pilot is considered to be no longer able to satisfactorily meet the required standard.

6. Testing Procedure

- 6.1. There are four parts to each wings test:
 - a) Pre-flight inspection of model.
 - b) Oral Test.
 - c) Pre-flight procedures test.
 - d) Flight Test.
- 6.2. Each part is marked on a pass/fail basis and total mastery is required to qualify.
- 6.3. Retesting is permitted. The examiner may decide if a retest can be carried out on the same day or if there needs to be some retraining or consolidation before the retest.

7. Pre Flight inspection of model

Check that:

- a) All radio equipment is secured in the model and protected against engine vibration.
- b) Pushrods, ball links clevises and other fittings are secure.
- c) All controls are effective, check especially for binding links or slowing of servos.
- d) Engine is mounted securely and propeller has no cracks or damage.
- e) Wings are firmly mounted and any bracing wires secure.
- f) There are no loose or missing nuts and bolts.
- g) Receiver battery pack is suitable (single replaceable cells are allowable but definitely not recommended).
- h) All hinged flying surfaces secure.
- i) CG is in right position.
- j) Critical structure is of adequate strength with no cracks or significant warps.
- k) The radio and switch free of fuel and oil.

And for *Helicopters only* check that:

- l) The gyro is correct and secure.
- m) Wiring is clear of mechanics.
- n) The receiver aerial is in good condition with no chafing or damage and aerial cannot become entangled with any moving or rotating part.
- o) All main and tail rotor blades are not damaged, checking root at blade pivot hole and the tip weight installation.

8. Oral Test

The candidate must display a good knowledge of:

- a) Local flying and field rules, for example flying times.
- b) Local no-flying zones.
- c) Emergency landing areas.
- d) Maximum altitude.
- e) Local maximum noise levels.
- f) The frequency control system in use.
- g) The importance of charged batteries.

9. Pre-flight Procedures check

The following checks must be made:

- a) Correct frequency peg attached to transmitter.
- b) Radio switches on, battery OK.
- c) Basic Radio Range check (Tx aerial collapsed)
- d) Check controls for full and free travel, and in the right sense.

And for Helicopters only:

- e) Start engine, one hand holding rotor head.
- f) Run engine up at least 10m from pits. Check blade tracking and vibration.

10. Flight Test

Following is a brief description of each manoeuvre required. Details of each test are in section 11.

- 10.1. Fixed Wing Powered Aircraft
 - a) Take off
 - b) Level flight
 - c) Procedure turn
 - d) Horizontal figure of eight
 - e) Left hand circuit landing approach
 - f) Overshoot
 - g) Right hand circuit landing approach
 - h) Landing, power on
 - i) Takeoff (within 15 minutes of landing)
 - j) Left hand circuit
 - k) Landing, power off

Note: In the case where flying strip or wind velocity prohibits actually landing off both a left and a right hand circuit approach, an overshoot may replace one of the landings.

- 10.2. Gliders
 - a) Launch (bungee, winch or hand tow)
 - b) Straight flight for 30 seconds, stall then recover to level flight
 - c) Procedure turn
 - d) Horizontal figure of eight
 - e) Right hand circuit landing approach
 - f) Landing within 10 metres of a spot
 - g) Relaunch (within 15 minutes of landing)
 - h) Demonstrate a series of four 180° U-turns over a 150metre course then land safely... **or** for 'A'-type (F3B) qualification:

- i) Complete 2 rounds of F3B achieving one landing score of 35 or better, 6 Laps, and a speed run of 45 seconds or faster

10.3. Helicopters

- a) 10 Second Hover
- b) Hovering M
- c) Tail in Circle
- d) Take off, circuit and landing

11. R/C Proficiency Test Manoeuvres

It is important the pilot under test show complete control of the model throughout the test and that if at any time safe flying is compromised, the test is terminated.

11.1. RC Power

The pilot should safely start the model and deliver it to the take off point.

a) Take off

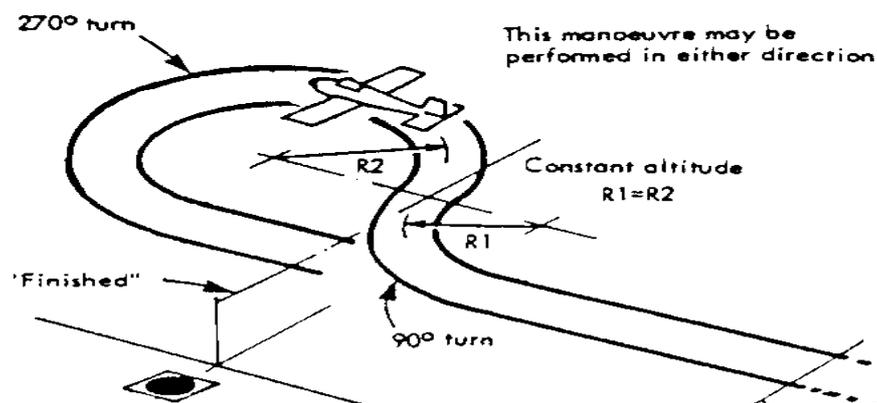
The model should stand still on the ground, with the engine running. The takeoff should be straight and into wind and conclude with a 90° turn away from the pits. Some swing is acceptable as long as it is clear that the pilot has control over the model.

b) Level flight

The model should make a straight and level flight upwind of 100 metres or 10 seconds whichever is of least duration. The model should pass over the landing area or as directed.

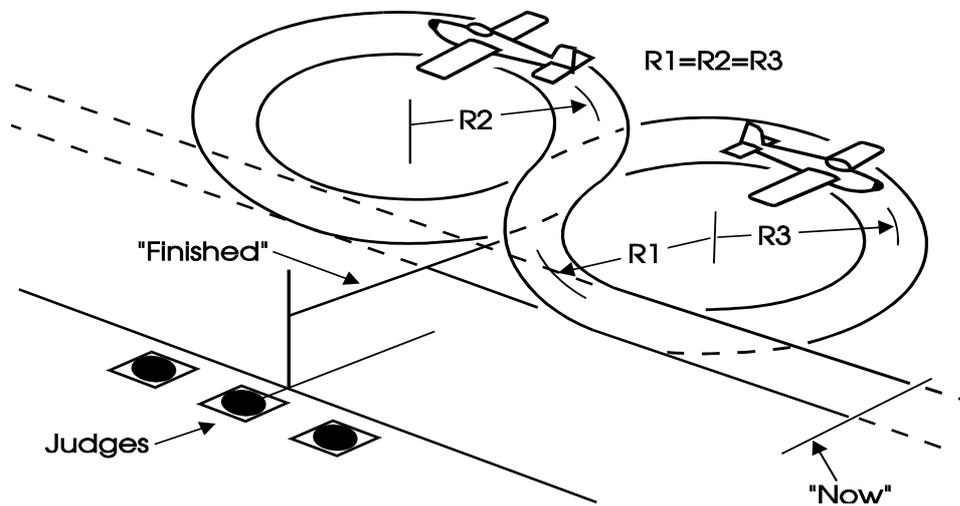
c) Procedure turn

Commencing from straight and level flight the model is turned 90° away from the pits, and then through 270° in the opposite direction resuming straight and level flight on the opposite heading to that of the entry. The manoeuvre must be commenced in order to place the point where the model changes from the 90° turn to the 270° turn on a line which passes through the centre of the landing area or as directed, at right angles to the direction of entry.



d) Horizontal figure of eight

Commencing from straight and level flight the model must turn 90° away from the pits, followed by a 360° turn in the opposite direction, followed by a 270° turn in the first direction completing the manoeuvre on the original approach line. The intersection (mid point) of the manoeuvre shall be on a line that is at right angles to the direction of entry and passes through the centre of the landing area.



- e) **Left hand circuit landing approach** The rectangular approach is commenced with the model flying from left to right above the landing area followed by a 90° left turn, a crosswind leg, a second 90° left turn, a downwind leg, a third 90° left turn, final cross wind leg, a final 90° left turn, then a final descent towards a final touch down point. The model should commence descent no earlier than the downwind leg.
- f) **Over-shoot**
The model approaches as for a normal landing, and over the landing area at a height of approximately 3 metres, power is applied and the model climbs straight ahead.
- g) **Right hand circuit landing approach**
Same as the left-hand approach except that all turns are 90° to the right.
- h) **Landing, power on**
The model approaches with power reduced to idle then rounds out smoothly, adopting the three point attitude applicable to the specific type and touches down with a minimum of bouncing and roll to a stop.
- i) **Takeoff** (within 15 minutes of landing)
As a) above
- j) **Left hand circuit; and**
- k) **Landing, power off**
Power is cut to a low idle or complete stop when the model is overhead the landing area. A landing follows a rectangular approach with steady descent on each leg. Power should not be applied during the approach or landing.

11.2. RC Glider

- a) **Launch**
Using bungee, hand tow or winch, the pilot must control the climb of the model without excessive weaving or stalling on the line then release smoothly into gliding flight.
- b) **Straight Flight & Stall**
The model is flown straight and level in a prescribed direction for 30 seconds then stalled and recovered smoothly on the same heading as the straight flight.
- c) **Procedure Turn** Same as in 11.1. c).
- d) **Horizontal Eight** Same as 11.1. d)
- e) **Right Hand Approach; and**
- f) **Landing**
The rectangular approach is commenced with the model into wind above the landing area followed by a 90° right turn, a crosswind leg, a second 90° right turn, a downwind leg, a third 90° right turn, final cross wind leg, a final 90°

right turn, then a final descent towards a final touch down point. The model must come to rest upright, complete and within 10 metres of a pre-determined spot.

g) Relaunch

Using the same launching method as before, the model must be airborne within 15 minutes of the landing.

h) Four 180° U-turns

Flying between two markers placed approximately 150 metres apart, the flyer must make four consecutive 180° U-turns over the markers, in either direction, with straight legs between the turns, then land safely. **OR:**

i) F3B tasks (for 'A' Type qualification only)

Using the 1997 F3B course and flying rules, the pilot must fly two complete rounds, and in those rounds achieve one landing score of 35 or better, a speed run of 45 seconds or better and a distance run of 6 laps or better.

11.3. Helicopter

The flight test should be completed on a standard F3C competition square which is a 10 metre square with a flag at each corner and two central flags. The two central flags may be omitted for this flight test.

In the following sections, hovering the model at eye level means that the model's landing skids must be at the same altitude as the competitor's eyes.

For the first three hovering manoeuvres, the pilot must stand within a radius of 0.6 metres of one of the centre flags. The pilot must then stand in any position outside the square to complete the Take Off and Landing manoeuvre. The pilot may move between these two manoeuvres but not during them.

a) 10 Second hover

Model takes off from central helipad, climbs to eye level and hovers for 10 seconds. Model then descends to a landing on the central helipad.

b) Figure M

Model takes off vertically from central pad and stops at eye level. While maintaining a heading parallel to the examiner's line and a constant altitude, the model moves along a diagonal line to the left or right near corner flag and stops. The model then moves forward to the second corner, stops, then moves sideways to the third corner and stops. The model then moves backwards to the fourth corner, stops again, then proceeds to move along a diagonal line back to the central helipad where it stops again. The model then descends to land on the central helipad.

c) Tail In Circle

The model ascends vertically to eye level and stops. The model then flies in a circular path to the left or right while maintaining a constant altitude and distance from the pilot finishing back over the central helipad. The tail must always point towards the pilot. The model then descends to land on the central helipad. (Pilot then moves to a nominated pilot position outside the square)

d) Take off, circuit and landing

The model lifts off from the central helipad, rises, and accelerates to forward flight. The model then flies a circuit around two of the corner flags, descends, and decelerates to land on the central helipad. The model may fly around the pilot.