

Model Flying NZ Flying Rules
Section 10b: Radio Control Aerobatics Expert Schedule

1. EXPERT

1.1 General (Note that the FAI guidelines also apply)

Expert is a step up from the Clubman class in precision R/C aerobatics. The schedule is designed using manoeuvres that demonstrate three fundamentals of aerobatic flight - lines, loops and rolls.

The NZ Aerobatics SIG would like to acknowledge the hard work of the NSRCA sequence committee, headed by Sean Mersh (NSRCA D8) in designing this sequence, and allowing us permission to use it.

Note the NZRCAA has renamed the sequence from 'Intermediate' (USA) to 'Expert' (NZ) and also removed the take off and landing from the sequence.

The manoeuvres shall be executed in an uninterrupted sequence.

1.2 Who can enter?

Any MFNZ member can come along and give it a go! Normally you would start flying Clubman, and then move up to Expert as your skills improve. If you need help, please ask.....

1.3 Type of model

Expert requires a model that fits the FAI F3A model specifications. Essentially, the model must fit in a 2m x 2m box, and weigh less than 5kg (including batteries, but without fuel).

1.4 Competition Format

1.4.1 To enter, competitors must register. This enables a draw to be made to determine flying order. A pilot's briefing will be held prior to commencement of the contest, and this is a good time to ask any questions. Time permitting, a demonstration flight of the schedule will follow for the benefit of both contestants and judges.

1.4.2 The contest will consist of several 'rounds'. A line director will let you know when to start your motor. The contestant shall have a helper/caller to assist with the start, place the aircraft on the flight line, call the manoeuvres during the schedule, and retrieve the aircraft after the flight.

Expert Maneuver Descriptions

And Suggested Downgrades

Study of this guide by the competitor will help him learn exactly what is expected, while study by the judge will help them decide precisely how well the competitor meets these expectations. The competitor or judge should refer to the FAI 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.

- 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.
- All maneuvers must have a level entry and exit.
- Unless specifically stated, 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 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 tracks.

Below is the sequence for Expert. U, D, and T represent Upwind, Downwind and Turnaround, respectively.

	NZRCAA Expert Pattern	K-factor
1.	Stall turn with ¼ rolls up and down	4
2.	Half reverse Cuban eight	2
3.	Non rolling Pyramid loop	4
4.	Humpty bump with options (half roll up or ¼ roll up and down)	5
5.	Avalanche	4
6.	Reverse Shark's tooth ½ roll on the 45 degree up line	3
7.	Two Horizontal Rolls	4
8.	Stall turn with a full roll up	3
9.	Top hat with half rolls up and down	5
10.	Half Cuban eight	2
11.	Cuban eight	5
12.	Half loop (inverted exit)	1
13.	45 degree down line with a half roll	3
14.	Top hat with ¼ rolls, (inline option ½ roll up)	4
15.	2 half rolls reversed, pause in the middle	4
16.	Half square loop with a half roll up	2
17.	Three turn spin	3
		56

Maneuver Descriptions:

- 1. Stall turn with ¼ rolls up and down. (U):** From upright, pull through a ¼ loop to a vertical up line, hesitate, perform ¼ roll, hesitate, perform a stall turn, hesitate, perform ¼ roll, hesitate, pull a ¼ t loop to exit in upright flight.
- 2. Half reverse Cuban eight (T):** From upright pull a 1/8 inside loop to a 45° up line, hesitate, perform a ½ roll, hesitate, perform a 5/8 inside loop to exit in upright flight in the opposite.
- 3. Non-rolling Pyramid loop (D):** From upright fly past center and pull a 3/8 inside loop to an inverted 45° up line, hesitate, pull a ¼ inside loop to a 45° downline, hesitate, pull a 3/8 inside loop to upright horizontal level flight.
- 4. Humpty bump with options (half roll up or ¼ roll up and down). (T):** From upright pull a ¼ inside loop to a vertical up line, hesitate, perform ½ roll, hesitate, perform a ½ inside or outside loop to a vertical downline, hesitate, perform a ¼ loop

to horizontal flight in the opposite direction. Optionally perform $\frac{1}{4}$ roll on the up and down line, exit upright

5. **Avalanche. (U):** From upright pull 1 full inside loop with an inside or outside snap roll performed at 180 degrees.
 6. **Reverse Shark's tooth with $\frac{1}{2}$ roll on the 45° upline. (T):** From upright pull a $\frac{1}{8}$ inside loop to a 45 degree up line, hesitate, perform a $\frac{1}{2}$ roll, hesitate, pull a $\frac{3}{8}$ inside loop to a vertical downline, hesitate, pull a $\frac{1}{4}$ inside loop to upright horizontal flight in the opposite direction.
 7. **Two Horizontal Rolls (D):** From upright, perform two rolls to exit upright.
 8. **Stall turn, full roll up. (T):** From upright, pull through a $\frac{1}{4}$ loop to a vertical up line, hesitate, perform 1 full roll, hesitate, perform a stall turn, hesitate, pull through a $\frac{1}{4}$ loop to exit upright in the opposite direction.
 9. **Top hat with half rolls up and down. (U):** From upright, pull a $\frac{1}{4}$ inside loop to a vertical up line, hesitate, perform $\frac{1}{2}$ roll, hesitate, pull a $\frac{1}{4}$ inside loop to inverted horizontal flight, hesitate, pull a $\frac{1}{4}$ inside loop to a vertical downline, hesitate, perform a $\frac{1}{2}$ roll, hesitate, perform a $\frac{1}{4}$ inside loop to exit in upright horizontal level flight.
 10. **Half Cuban eight. (T):** From upright, pull a $\frac{5}{8}$ inside loop to a 45° downline, hesitate, perform a $\frac{1}{2}$ roll, hesitate, perform a $\frac{1}{8}$ inside loop to exit in horizontal flight in the opposite direction.
 11. **Cuban eight. (D):** From upright, fly past center and perform a $\frac{5}{8}$ inside loop to a 45° inverted downline, hesitate, perform a $\frac{1}{2}$ roll, hesitate, perform a $\frac{3}{4}$ inside loop to a 45° inverted downline, hesitate, perform a $\frac{1}{2}$ roll, hesitate, pull a $\frac{1}{8}$ inside loop to exit in horizontal level flight.
 12. **Half loop (inverted exit). (T):** From upright, pull through a $\frac{1}{2}$ loop to exit in inverted horizontal flight in the opposite direction.
 13. **45° downline with $\frac{1}{2}$ roll. (U):** From inverted pull through a $\frac{1}{8}$ inside loop to an inverted 45° downline, hesitate, perform one half roll, hesitate, pull a $\frac{1}{8}$ inside loop to upright horizontal flight.
 14. **Top hat with $\frac{1}{4}$ roll up and down, (inline option $\frac{1}{2}$ roll up). (T):** From upright perform $\frac{1}{4}$ inside loop to a vertical up line, hesitate, perform $\frac{1}{4}$ roll, hesitate, perform a $\frac{1}{4}$ inside loop to an inverted horizontal track, hesitate, perform a $\frac{1}{4}$ inside loop, hesitate, perform a $\frac{1}{4}$ roll, hesitate, pull a $\frac{1}{4}$ inside loop to upright level flight in the opposite direction. Optionally perform a $\frac{1}{2}$ roll on the up line and no rolls on the down line.
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- 15. Two half roles reversed, pause in the middle. (D):** From upright, before center perform a $\frac{1}{2}$ roll, hesitate, perform a $\frac{1}{2}$ roll in the opposite direction, exit in horizontal upright flight.
- 16. Half Square loop with a half roll (T):** From upright perform a $\frac{1}{4}$ inside loop to a vertical up line, hesitate, perform one half roll, hesitate, perform $\frac{1}{4}$ outside loop to exit in upright horizontal flight in the opposite direction.
- 17. Three turn spin (U):** From upright approach center with decreasing speed until model stalls at center, performs the required 3 turns of rotation (spin) and stops with the wings perpendicular to the flight line in a vertical downline, hesitate, perform a $\frac{1}{4}$ loop to upright level flight to finish. Stall is the center of the maneuver and should occur directly over the center pole. All spins begin and end with a horizontal line.