

# **MFNZ FLYING RULES**

## **Section 9: Helicopter**

### **Updates and Alterations**

<b>Date</b>	<b>Paragraph</b>	<b>Change</b>
May 2006	3.0	Sportsman new schedule
Dec 2011	Document 2.0 2.2 & 3.2 2.3 & 3.3  2.3.1 & 3.3.1	<ul style="list-style-type: none"><li>- Re formatted, changes from NZMAA to MFNZ</li><li>- Introduction of manoeuvre diagrams for Clubman</li><li>- Wording change</li><li>- Clarification of competition round numbers and scoring control.</li><li>- Addition of over-ride to accept Flybarless helicopters in domestic classes.</li><li>- Clarification of contest area layout.</li><li>- To state MFNZ Flying rules over-ride international documents in any areas of conflict or ambiguity.</li><li>- Addition of Contest Area Layout diagram and description</li></ul>
Nov 2012	2.3 & 3.3	<ul style="list-style-type: none"><li>- Removed scoring penalty for flybarless models</li><li>- Word omission error fix</li></ul>

## **MFNZ FLYING RULES**

### **Section 9: Helicopter**

#### **1. HELICOPTER : APPLICABILITY**

R/C Helicopter classes flown in New Zealand include;

- The FAI International class of F3C which is flown to the rules in the latest edition of the FAI Sporting Code – relevant excerpts are in Section 9A of the MFNZ Flying Rules.
- There are two domestic (non-FAI) classes:
  - Clubman for Beginners
  - Sportsman for Intermediate fliers.

Rules for the domestic classes follow.

#### **2. CLUBMAN HELICOPTER**

##### **2.1 PURPOSE**

To offer a beginners class of competition to New Zealand Helicopter pilots. It will also promote the development of flying skills that are necessary to be able to participate in Sportsman Helicopter events with confidence and safety.

##### **2.2 NATIONAL COMPETITION**

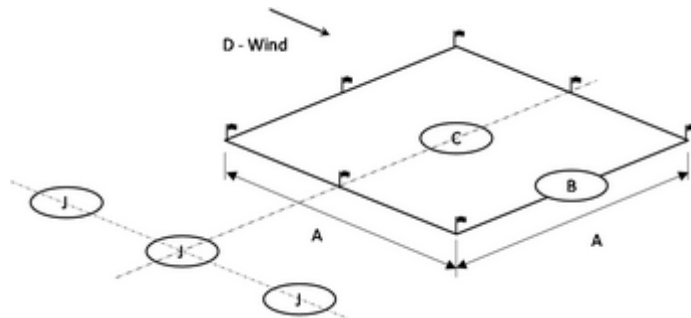
If there are sufficient entries, the Clubman Helicopter event will be flown at all four Masters series competitions held at various sites throughout New Zealand, including the MFNZ National Championships, as an official event. The overall winner of the four Masters Series events will take the title of New Zealand Masters Series Champion - Clubman Helicopter. The winner of the National Championships event will take the title of New Zealand National Champion - Clubman Helicopter. The winner(s) of these titles, from that date on, will not be allowed to enter any Clubman Helicopter event in New Zealand

##### **2.3 GENERAL RULES**

MFNZ General Competition Rules and judges guide specified in section 5.4, 5D, and 5E of the FAI F3C rules also apply to this competition with the following exceptions:

- Clubman will be contested over 3 rounds. The scores from all rounds are added together and normalised to give the final result.
- The competition will be judged by 3 judges who will provide a raw score out of 10 for each manoeuvre.
- Flybarless models are permitted to fly in the Clubman class.
- Clubman contest area layout will be as per layout described in section 2.3.1.
- The MFNZ Flying Rules override any conflict or ambiguity found between the New Zealand and FAI schedules.
- In matters of dispute, the chief judge's decision is final.

### 2.3.1. Clubman Contest Area Layout



The Clubman Contest Area is made up of:

- A square with sides 'A' of 10 m.
- Flags or cones are used to determine the corners and centres of the sides
- The central helipad 'C' has a radius of 0.6 m and is located at the centre of the square.
- For first three hovering manoeuvres in the Clubman event, the pilot must stand with a circle 'B' with a radius of 0.6 m (see 2.4.3).
- Wind in direction 'D' as shown here and in manoeuvres, is indicative only. The square maybe be set-up with a right to left wind direction relative to the judges.
- The judges position 'J' will normally be at a safe distance of no less than 15 m from the edge of the square.
- The pilot's caller stands close to/behind the pilot outside of the boundaries of the square.

## 2.4 MANOEUVRES

2.4.1. The flight program consists of 5 compulsory manoeuvres. These manoeuvres are scored in the same way as the F3C competition. The competitor has 9 minutes to complete the flight program in the following order:

1. 10 second Hover
2. Hovering M
3. Tail-In Circle
4. Vertical Triangle
5. 180 Degree Landing

2.4.2. 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 competitors' eyes.

2.4.3 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 Vertical Triangle and 180 Degree Landing manoeuvres. The pilot may move between these two manoeuvres but not during them.

## 2.5 CLUBMAN SCHEDULE

### 1. 10 Second Hover

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

### 2. Hovering M

- The model takes off vertically from central pad and stops at eye level.
- While maintaining a heading parallel to the judges 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.

### 3. 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)

### 4. Vertical Triangle

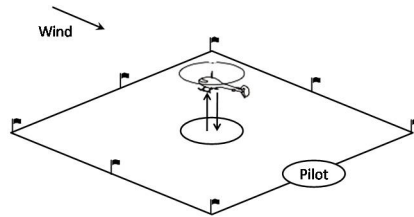
- The model takes off from central helipad, climbs to eye level and stops.
- The model then flies backwards from the helipad to one of the centre flags and stops.
- The model then climbs forward at a 45 degree angle to an altitude of 5 metres above eye level directly over the central helipad and stops.
- The model then descends forward at a 45 degree angle to eye level directly over the opposite centre flag and stops.
- The model then flies backward to central helipad, stops, then descends to landing.

### 5. 180 Degree Landing

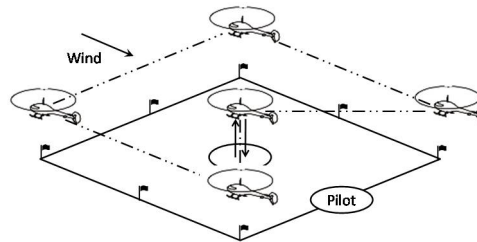
- The model takes off and flies at a minimum altitude of 5 metres.
- When the model reaches a position directly in front of the judges the model commences a 180 degree turn and descent and lands in the central helipad.
- The model should exhibit a constant rate of turn and constant rate of descent to a point just prior to touchdown on the pad.
- The flight path of the model must appear as a semi-circle when viewed from above.

## CLUBMAN MANOEUVRE SCHEDULE

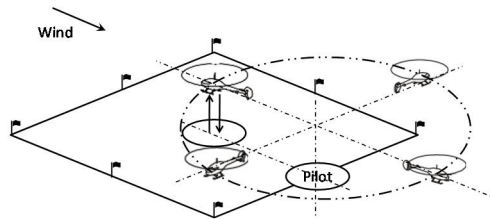
### 1. 10 Second Hover



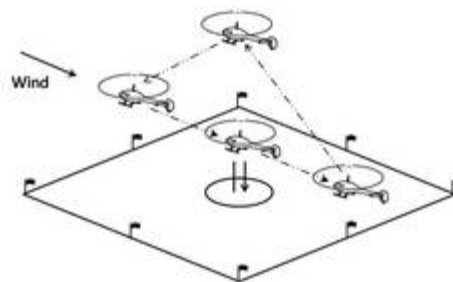
### 2. Hovering M



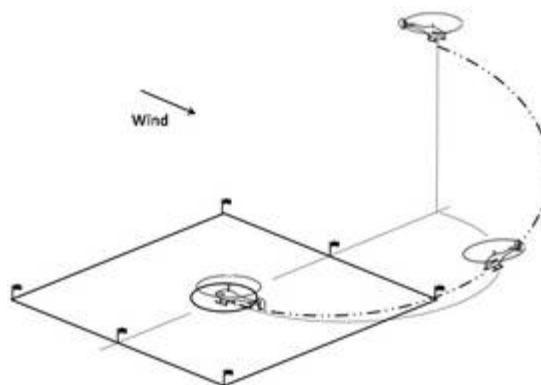
### 3. Tail-In Circle



### 4. Vertical Triangle



### 5. 180 Degree Landing



### 3. SPORTSMAN HELICOPTER

#### 3.1 PURPOSE

To offer an intermediate class of competition to New Zealand Helicopter pilots. It will also promote the development of flying skills that are necessary to be able to participate in F3C events with confidence and safety.

#### 3.2 NATIONAL COMPETITION

If there are sufficient entries, the Sportsman Helicopter event will be flown at all four Masters Series competitions held at various sites throughout New Zealand, including the MFNZ National Championships, as an official event.

The overall winner of the four Masters Series events will take the title of New Zealand Masters Series Champion - Sportsman Helicopter. The winner of the National Championships event will take the title of New Zealand National Champion - Sportsman Helicopter.

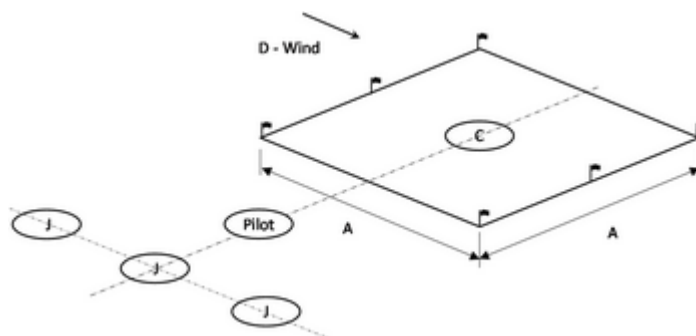
The winner(s) of these titles, from that date on, will not be allowed to enter any Sportsman or Clubman Helicopter event in New Zealand.

#### 3.3 GENERAL RULES

MFNZ General Competition Rules and judges guide specified in section 5.4, 5D, and 5E of the FAI F3C rules also apply to this competition with the following exceptions:

- Sportsman will be contested over 3 rounds. The scores from all rounds are added together and normalised to give the final result.
- The competition will be judged by 3 judges who will provide a raw score out of 10 for each manoeuvre. K-factors if applicable will be applied accordingly.
- Flybarless models are permitted to fly in the Sportsman class.
- Sportsman contest area layout will be as per layout described in section 3.3.1.
- The MFNZ Flying Rules override any conflict or ambiguity found between the New Zealand and FAI schedules.
- In matters of dispute, the chief judge's decision is final.

##### 3.3.1. Sportsman Contest Area Layout



The Sportsman Contest Area is made up of:

- A square with sides 'A' of 10 m.
- Flags or cones are used to determine the corners and centres of the sides
- The central helipad 'C' has a radius of 0.6 m and is located at the centre of the square.
- Wind in direction 'D' as shown here and in manoeuvres, is indicative only. The square maybe be set-up with a right to left wind direction relative to the judges.

- The judges position 'J' will normally be at a safe distance of no less than 15 m from the edge of the square.
- The pilot stands in a position in front of the middle judge and approx. half way between the judges and square. A reference mark will be provided.
- The pilot's caller stands close to/behind the pilot outside of the boundaries of the square.

### 3.4 MANOEUVRES

3.4.1 The flight program consists of 8 compulsory manoeuvres and one free pass. These manoeuvres are scored in the same way as the F3C competition with the addition of the K factors for the hovering manoeuvres. This means that a pilots' score for the hovering manoeuvres is multiplied by a factor of 2. The competitor has 9 minutes to complete the flight program in the following order:

1. Vertical Rectangle 1 - **K-2**
2. Nose-In Circle - **K-2**
3. Vertical Triangle with 360 Degree Pirouette - **K-2**
4. Loop
5. Split S
6. Roll
7. 540 degree Stall Turn
8. Free Pass (not scored)
9. Either Straight-In Autorotation, or Autorotation with 180 degree Turn

3.4.2 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 competitors' eyes.

3.4.3 The competitor must stand in the 1.2 meter pilot circle for all manoeuvres

### 3.5 SPORTSMAN SCHEDULE

#### 1. Vertical Rectangle

- The model takes off vertically from the helipad and ascends to eye level and pauses for at least 3 seconds.
- The model then flies backwards to one of the centre flags (2 or 5) and pauses for at least 3 seconds.
- The model then climbs vertically 4 m and pauses for at least 3 seconds.
- The model aircraft then flies forward 10 m to opposite centre flag and pauses for at least 3 seconds
- The model aircraft then descends 4 m and pauses for at least 3 seconds.
- The model aircraft then flies backward to the centre helipad, pauses for at least 3 seconds before it lands on the helipad.

## 2. Nose in Circle

- The model takes off from central helipad, climbs to eye level and pauses for at least 3 seconds.
- The model then flies backwards from the helipad to one of the centre flags and pauses for at least 3 seconds.
- The model then flies a nose in circle in either direction 10 meters diameter with the helipad as the centre.
- When the model has completed 360 degrees it pauses for at least 3 seconds at the centre flag, flies forward over helipad, pauses for at least 3 seconds
- The model then descends to land on the central helipad.

## 3. Vertical Triangle with 360 Degree Pirouette

- The model takes off from central helipad and climbs vertically to eye level and pauses for at least 3 seconds.
- The model then flies backwards from central helipad to one of the centre flags (2 or 5) and pauses for at least 3 seconds.
- The model then climbs forward at 45° to an altitude 5m above eye level directly over central helipad and pauses for at least 3 seconds.
- The model performs a 360° pirouette in either direction and pauses for at least 3 seconds.
- The model then descends forward at 45° to eye level directly over opposite centre flag and pauses for at least 3 seconds.
- The model then flies backwards to central helipad, pauses for at least 3 seconds and descends to a landing on the central helipad.

## 4. Loop

- The model aircraft flies straight and level for a minimum of 10m, then performs a single loop.
- The model should be at the peak and the trough of the loop when crossing centreline.
- The model then exits continuing on the same altitude and heading at which it entered.

## 5. Split S

- The model flies straight and level for a minimum of 10 meters, executes a half roll to inverted followed immediately by a downward inside half loop.
- The manoeuvre is completed with the model flying straight and level for 10 meters minimum.
- The half roll may be completed in either direction.

## 6. Roll

- The model flies straight and level for a minimum of 10 meters and performs an axial (aileron) roll.
- The model should be inverted when crossing centreline.
- The model then continues at same altitude and heading for a further 10 meters.
- The roll may be in either direction



### 7. 540 degree Stall Turn

- Model flies straight and level for a minimum of 10m, then transitions to a vertical ascent as it passes the centre-line.
- After the model comes to a stop, model executes a 540° pirouette so that the nose points downward
- The model transitions back to same path and altitude as at beginning of manoeuvre.

### 8 Free Pass

- This is optional, and is to correct for wind

### 9 Auto landing – Straight-line or 180 degree.

#### Options apply here;

9A. A straight-line auto is performed from down-wind into the centre circle. A maximum of 8 points can be scored from this option.

9B. A 180-degree auto is performed from up wind into the centre circle. A maximum of 10 points can be scored from this option.

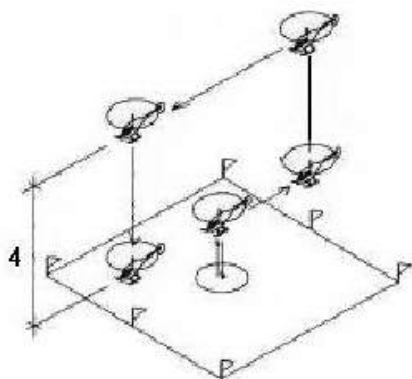
#### 9A. Straight-line Auto (downwind):

- Model flies at a minimum altitude of 20m.
- Once the model reaches a position, 45 degrees from the circle, the manoeuvre must be called
- The model must be in the autorotative state when it cuts this plane.
- The engine/motor of the model must be at idle/off at this point and the model must be descending.
- The descent must be at a constant rate.
- The model makes a smooth touchdown on the helipad with the skids or landing gear completely inside the 1.2 m circle and parallel to the judge's line.

#### 9B. 180 degree Auto (upwind/downwind):

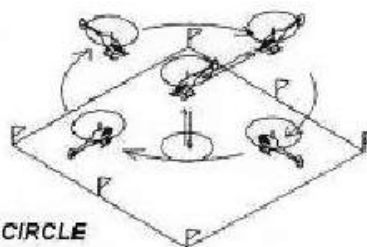
- Model flies at a minimum altitude of 20m.
- Manoeuvre begins when model crosses an imaginary plane that extends vertically upward from a line drawn from the centre judge out through the central helipad.
- Model must be in the autorotative state when it cuts this plane
- The engine/motor must be at idle/off at this point and the model must be descending.
- The 180° turn must start at this point and the turning and descending rate must be constant from this point to a point just before touchdown on the helipad.
- The flight path of the model must appear as a semi-circle when viewed from above, starting at the vertical plane and ending at a line drawn from the centre judge through the central helipad.
- The model's flight path must never be parallel to the ground or judge's line.
- The model makes a smooth touchdown on the helipad with the skids or landing gear completely inside the 1.2 m circle and parallel to the judge's line.

**SPORTSMAN MANOEUVRE SCHEDULE**

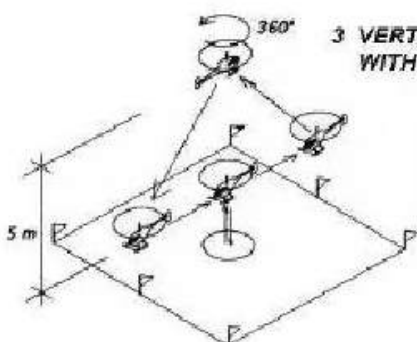


**1 VERTICAL RECTANGLE**

WIND →

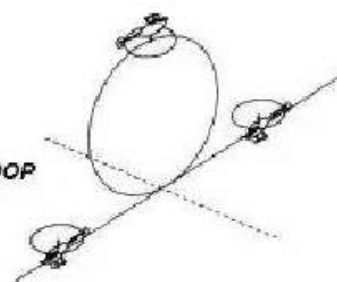


**2 NOSE IN CIRCLE**

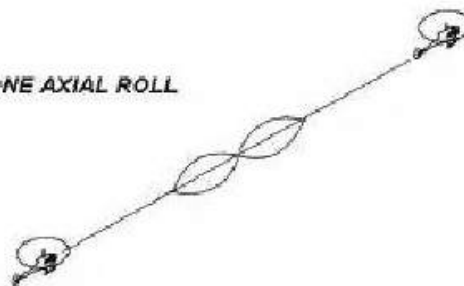


**3 VERTICAL TRIANGLE WITH 360° PIRQUETTE**

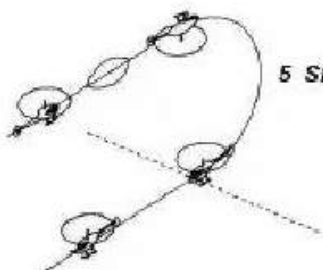
**4 ONE INSIDE LOOP**



**6 ONE AXIAL ROLL**

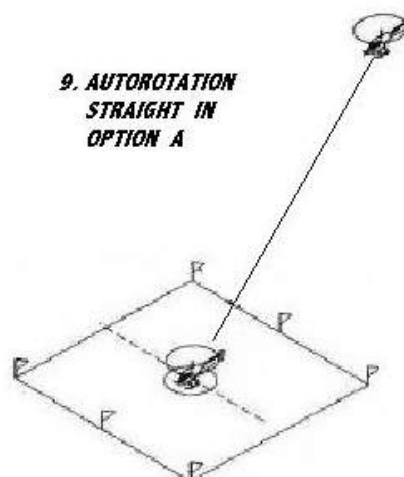


**5 SPLIT S**

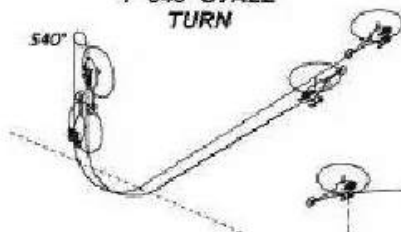


**8 FREE PASS**

**9. AUTOROTATION STRAIGHT IN OPTION A**



**7 540° STALL TURN**



**9 AUTOROTATION WITH 180° TURN option B**

