

## 5.11 CLASS F3N – RC FREESTYLE AEROBATIC HELICOPTERS

### 5.11.1 Definition of a Radio Controlled Model Helicopter

A Radio Controlled (R/C) model helicopter is a heavier-than-air Model Aircraft (MA) that derives all of its lift and horizontal propulsion from a power driven rotor system(s) rotating about a nominally vertical axis (or axes). Fixed horizontal supporting surfaces up to 4 percent of the swept area of the lifting rotor(s) are permitted. A fixed or controllable horizontal stabiliser of up to 2% of the swept area of the lifting rotor(s) is permitted. Ground effect machines (hovercraft), convertiplanes or aircraft that hover by means of propeller slipstream(s) deflected downward are not considered to be helicopters.

### 5.11.2 General Characteristics

The swept area of the lifting rotor is not limited. The engine displacement is not limited. The use of pre-programmed flight manoeuvres is forbidden.

Limitations are:

- a) WEIGHT: The weight of the MA (with fuel or with batteries) must not exceed 6,5 kg.
- b) BATTERIES: Electric motors are limited to a maximum no load voltage of 51 volts for the propulsion circuit.
- c) ROTOR BLADES: All-metal main or tail rotor blades are prohibited.

### 5.11.3 Contest Area Layout

Refer to Figure 5.11.A. The drawing shows the recommended layout, the shape and distances of which should be kept for safety reasons. The centreline must be clearly indicated 20m out from the helipad.

### 5.11.4 Number of Helpers

After leaving the start box, the pilot is allowed one helper. The helper may give information to the pilot during the flight.

### 5.11.5 Number of Model Aircraft

The number of MA is not limited.

### 5.11.6 The Official Flight

There are three different flight programs: Set Manoeuvre flight, Freestyle flight and Music Freestyle flight. Before the flight the pilot has to be officially called. The MA can be flown or be carried to the flying area. The flight time begins when the pilot or his helper gives a distinctive hand signal, and finishes with another distinctive hand signal.

### 5.11.7 Scoring

The number of judges is at least three, and no more than five. At least 20% but not more than 40% of the judges must not have judged at the previous World Championships.

In the Set Manoeuvre flight each manoeuvre is given a score between 0 and 20 points by each judge. A manoeuvre that is not completed or not flown according to the description shall be scored zero (0) points. If a manoeuvre is scored zero points all judges must agree. In the freestyle or music freestyle flights the scoring is done after the flight according to the scoring criteria.

In the Set Manoeuvre flights, only manoeuvres that are completed in the flight time of 8 minutes will receive a score. If the flight time for the Freestyle or Music Freestyle program is less than three or more than four minutes, there shall be a downgrade of 5% for the flight. A flight shorter than two or longer than five minutes shall be scored zero points.

Manoeuvres must be performed where they can be seen clearly by the judges. If a judge, for some reason beyond the control of the competitor, is not able to follow the model aircraft through the entire manoeuvre, he may put a "Not Observed" (N.O.) mark. In this case, his score will, for that particular manoeuvre, be set to the average score given by the other judges, rounded to the nearest whole point.

### 5.11.8 Classification

After the completion of every round, all scores will be normalised by awarding 1000 points to the highest scoring flight. The remaining scores are then normalised to a percentage in the ratio of actual score over the highest score of the round. The scores should be calculated to at least two decimal places and recorded (truncated) to two places after decimal point.

There shall be two rounds of Set Manoeuvre flights and one round each for Freestyle and Music Freestyle. However, the lowest score of each competitor will be the throwaway score. The other scores are added together and then divided by the number of counting preliminary rounds.

The result is the preliminary score. If only one round is possible then the classification will be based on that round.

After completion of the preliminary flights, the top 10 competitors are entitled to three fly-off flights, one Set Manoeuvre flight, one Freestyle and one Music Freestyle flight. The normalised results of the preliminary rounds for the top 10 pilots plus the three fly-off scores provide four normalised scores with the best three to count for the final individual classification.

At national and open international competitions the preliminary/fly-off system is not mandatory.

Ties will be broken by counting the throwaway score. If the tie still stands, a “sudden death” freestyle fly-off must take place until a decision is made.

The team classification for World and Continental Championships is established at the end of the competition (after the fly-off flights) by adding together the numerical final placings of the three team members using the full list of competitors unless there is a fourth member of the team (who must always be a junior) in which case it will be the three best placed members. Teams are ranked from the lowest numerical scores to the highest, with complete three-competitor teams ahead of two-competitor teams, which in turn are ranked ahead of one-competitor teams. In case of a tie, the best individual placing decides the team ranking. (Ref: *CIAM General Rules*, C.15.6.2 i))

### 5.11.9 Organisation

The flight order for the first Set Manoeuvre round will be determined by a random draw. The flight order for rounds two (Freestyle), three (Set Manoeuvre) and four (Music Freestyle) will start after the first, second and third quarter of the initial order. The flight order for the fly-offs will be determined in the same manner.

**Preparation Time:** A competitor must be called at least 5 minutes before he is required to enter the start box. The MA may be hovered only up to 2m in the start box. After the preceding competitor has finished his flight, the competitor is given another minute (two minutes in Freestyle) to make last minute adjustments or checks.

### 5.11.10 Flight Program

#### Safety During the Flights

The prohibited flying area (see figure 5.11.A) is observed by the judges. If the safety line is crossed the flight shall be scored zero points.

The competitor may choose his position during the flight with the following constraints:

- (a) The MA must not be flown between the pilot and judges.
- (b) The pilot must stand in front of the judges.

The non-observance of these constraints will be penalised by a zero score in the safety criterion for the manoeuvre or the flight in Freestyle.

If, during a flight in any of the schedules, a part of the helicopter except the landing gear or tail fin touches the ground the flight is terminated and scored zero points. This also applies to the MA tilting over after a landing or autorotation.

#### Set Manoeuvre Flight

Every pilot makes his choice of seven different manoeuvres from the list of manoeuvres (refer to paragraph 5.11.11). He may choose different manoeuvres for each round. The list with the manoeuvres chosen for a round must be delivered to the Contest Director or an official before the beginning of the round. The flight time of the Set Manoeuvre rounds is eight minutes.

#### Freestyle Flight

Each competitor is given a flight timeframe of at least three, and no more than four minutes. During this time there are no restrictions for the flight or the performed manoeuvres except those regarding safety. The play-back of music is not allowed. The flight time begins when the helper gives a distinctive hand signal and finishes only with another distinctive helper hand signal.

#### Music Freestyle Flight

The same criteria as in Freestyle, but the play-back of music during the flight is prescribed. The flight time begins when the helper gives a distinctive hand signal and finishes only with another distinctive helper hand signal. If the music starts before the flight, the flight time starts not later than 15 seconds after the start of the music.

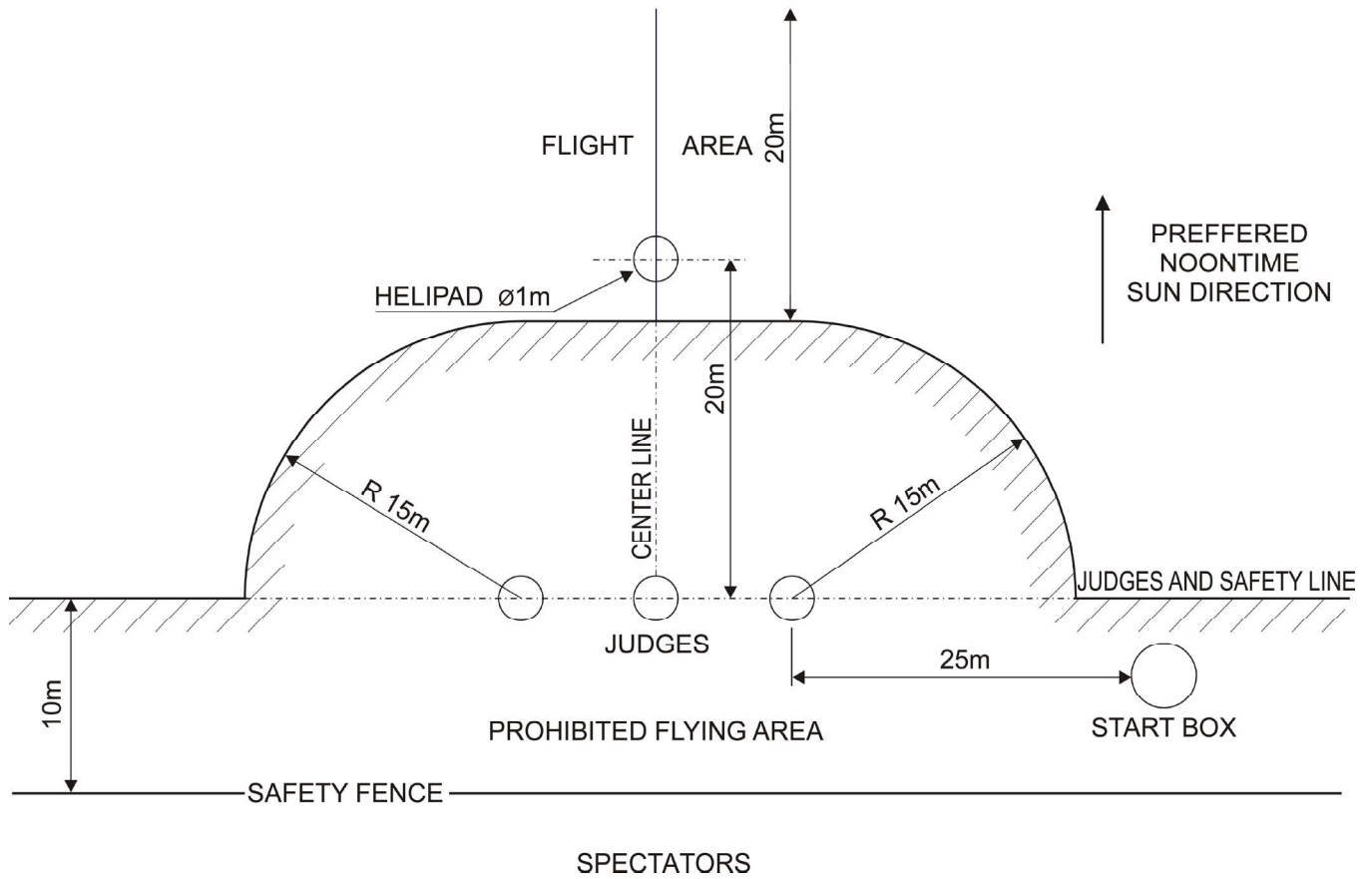
### 5.11.11 Optional Manoeuvres

The Optional Manoeuvre list that is changed on a yearly basis after approval by CIAM Bureau will be available from the F3 Helicopter Subcommittee Chairman at the beginning of each year.

*Note: It may not be possible to include in the F3 Helicopter volume of the Sporting Code the Optional Manoeuvres that are approved annually by Bureau at its December meeting.*

The F3N Contest Area Layout appears below.

**FIGURE 5.11.A – F3N CONTEST LAYOUT AREA**



The manoeuvre descriptions appear on the next page.