



# FAI Sporting Code

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## Section 4 – Aeromodelling

# Volume F4 Flying Scale Model Aircraft

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- F4J - RADIO CONTROL TEAM SCALE AEROPLANES (Provisional)
- F4K - RADIO CONTROL SCALE HELICOPTERS (Provisional)

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## **6.11.1 CLASS F4K - RADIO CONTROLLED SCALE HELICOPTERS (PROVISIONAL)**

### **6.11.1.1 Definition of a Radio Controlled Scale Helicopter Model**

A scale model helicopter is a replica of a full size heavier than air man carrying powered rotary winged aircraft. The aim of scale helicopter competitions is to evaluate the accuracy of replication of the shape, colour, and makings as well as the performance of the model compared to the full-size example.

This evaluation entails the evaluation of the accuracy of the build replication as well as the flight performance of the model.

The full-size helicopter that was modelled is always referred to as the “prototype” and the scale model of the prototype is referred to as the “model”.

### **6.11.1.2 Competition Program**

The Competition Program must entail all the rules and provisions as laid out in this document. Depending on the competition program each model may be static judged before its first flight or after completion of its first-round flight. It must however be static judged before its second-round flight.

### **6.11.1.3 Judges**

The Organiser of a scale helicopter competition must nominate three (3) Static Judges, which will determine the accuracy of the model compared to the prototype and at least three (3) Flight Judges which will evaluate the flight performance.

### **6.11.1.4 Scoring**

All items to be judged are awarded a point between zero (very bad) and ten (excellent). Scoring with half points (0,5) is allowed. Where a Coefficient (K) is indicated on the score sheet, the score out of ten is multiplied by the coefficient (K) to obtain the final score for the item that was judged.

### **6.11.1.5 Final Scores**

The following ratio applies: **Static: 50% and Flight: 100%**

- a) In the event that three or more rounds of flying is completed:  
The Static Score is added to the average of the best two flights.
- b) In the event of only two rounds of flying is completed:  
The Static Score is added to the average of the two flights.
- c) In the event of only one round of flying is completed:  
The Static Score is added to the single flight score.
- d) The Static Score can only be used for the final score if the model has completed an official flight.

### **6.11.1.6 Model Requirement**

- a) All models must take off and land in the manner of the prototype.
- b) No part of the model may be removed or replaced before flight after Static Judging, except the scale dummy pilot which may be removed or added. Visible flight batteries of electric powered models are excluded from this provision.
- c) Load hooks, model figures and cargo for relevant optional manoeuvres may be added or exchanged.

### **6.11.1.7 Number of Models**

Each competitor may participate with one (1) model only.

### **6.11.1.8 Helper**

A competitor must have a helper for an official flight. The helper is not allowed to touch the radio transmitter during an official flight, except during the start-up process. It is the responsibility of the timekeeper to ensure that this rule is complied with. If the helper touches the transmitter the flight will be score zero (0).

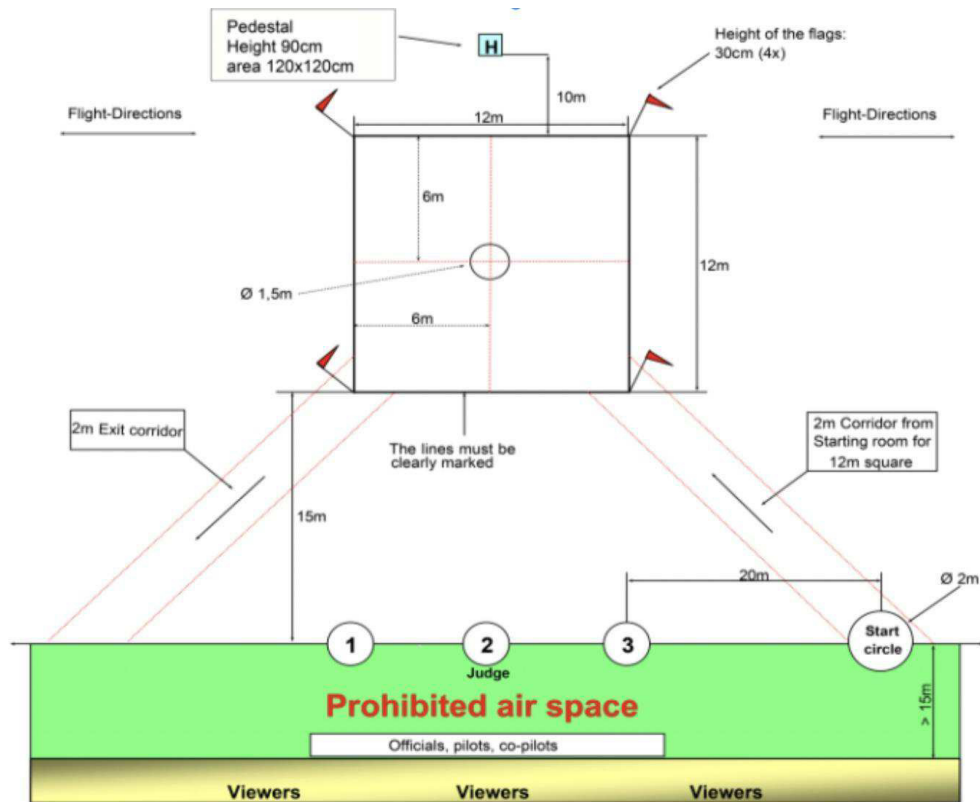
#### 6.11.1.9 Contest Organisation

Transmitter and frequency control is the responsibility of the organiser.

The starting order of the contestants will be drawn before the commencement of the competition.

The order of the participants remains the same throughout the competition. The organiser reserves the right to change the starting order if it is dictated so by circumstances.

#### 6.11.1.10 Contest Area Layout



### 6.11.2. R/C SCALE HELICOPTERS – STATIC RULES

#### 6.11.2.1 Judging

The aspects according to paragraph 6.11.2.3 must be judged from a minimum distance of one (1) metres from the model. The pilot and/or helper must be present at the judging in order to position the model as required by the judges.

The aspects according to 6.11.2.3 a/b/c must be judged from a minimum distance of five (5) meters from the model. For 6.11.2.3d, the model may be judged from a distance of 1 meter. The judges may not take measurements of the model and may not touch the model. The pilot and/or helper must be present at the judging in order to position the model as required by the judges.

#### 6.11.2.2 Proof of Scale

The following documentation must be submitted:

A maximum of five (5) photos of the prototype, of which 2 to 3 must show the complete helicopter, preferably from different angles. The direction of rotation and the number of blades of the rotor system must be clearly documented. This documentation must be submitted in triplicate, the second and third sets may be photocopies.

### 6.11.2.3 Evaluation of the Static Accuracy of the Model

The static judging is carried out as specified under 6.11.2.1 and 6.11.2.2 from a distance of 5 metres from the model. All items are awarded a point between zero (0) (very bad) and ten (10) (excellent). Scoring with half points (0,5) is allowed.

The main and tail rotor systems are not judged.

The time limit for static judging is 30 minutes.

6.11.2.3a	Accuracy of Outline (excluding main and tail rotor systems)	K = 7
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6.11.2.3b	Accuracy of Colour	K = 8
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6.11.2.3c	Identification marks and markings	K = 5
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6.11.2.3d	Realism	K = 5
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The static points can only be used for the final score if the model has completed an official flight.

## **6.11 ANNEX A – STATIC JUDGING GUIDE**

### **6.11A.1 General**

The Static Judges must be given the opportunity to do an overview of all the model helicopters entered in the competition in order to get an impression of the range of static standard of the entries. This superficial comparison must not be done from closer than three (3) metres from the models.

The Static assessment consists of the two elements: Outline and Colour and Identification Marks and other Markings. The judges must discuss all aspects during the judging in order to try and reach a mutually agreed score for each aspect. Each judge does have the right to differ and note a different score. Any deviations should however be minimal. A Chief Static Judge should be appointed before the start of the competition. He must have a good understanding of the judging process and be able to take leadership in discussing the errors found on the model and also make a suggestion for the points to be awarded for each aspect as a point of departure for further discussion by the judging panel. The use of half (0,5) points is allowed. Any damage incurred by a model, due to having flown an official flight before static judging as a result of the contest program, should not be penalised.

### **6.11A.2 Static Judging**

The judging under this aspect is to determine how closely the model resembles the prototype as far as its outlines and colour compared to the photos of the prototype in the documentation that was submitted. The interior and the cockpit and passenger area, where applicable, is not judged.

No measurements are taken, and the judges may not touch the model.

The number of rotor blades as well as their direction of rotation must be clearly documented. See paragraph 6.11.2.2.

### **6.11A.3 Accuracy of Outline and Colour**

The model is firstly positioned according to the photos in the documentation. The accuracy and peculiarities of the model are assessed from these aspects. Other aspects can then be checked with the aid of the photographs and captions in the documentation.

### **6.11A.4 Identification Marks and Markings**

All markings must be checked for their correct position. The size and font of all letters and numbers must be checked.

### 6.11.3 R/C SCALE HELICOPTERS – FLYING RULES

#### 6.11.3.1 General Characteristics

The total take-off weight shall not exceed 25 kg.

Empty weight without batteries or fuel shall not exceed 22 kg

Piston internal combustion motors, turbine motors and electric motors allowed.

All axis may be equipped with electronic stabilisation (gyros). GPS supported systems are not allowed.

#### 6.11.3.2 Official Flights

- a) Each participant will be called to the flight line in order to complete an official flight within the allowed preparation and flight times (6.11.3.4) in order for the flight score to count.
- b) The Contest Director may, at his discretion (and not that of the contestant) decide to award a reflight to a contestant that failed to take-off or complete his flight. The time at which the re-flight is to be flown is also at the discretion of the Contest Director.
- c) An official flight starts at the earliest when:
  - the contestant indicates to the timekeeper that he is ready to start his drive system
  - an official flight is considered to be completed when the model has landed and the main rotor has come to a stop, except in the case of the optional manoeuvres 6.11.3.6 Rescue and 6.11.3.6 Cargo Flight.
- d) In the event that the wind speed is 3m/sec or more for at least 2 minutes continuously, flying may be suspended upon a request by the Contest Director.

#### 6.11.3.3 Preparation Time

- a) The contestant must be given at least five (5) minutes warning to prepare for his flight.
- b) The contestant will then be instructed to initiate his start-up procedure for an official flight.
- c) In the event that the model has not taken off within seven (7) minutes after the start-up instruction was given, the flight will be called complete and zero (0) points will be scored.
- d) If the power unit of the model fails at take-off before the model has lifted from the ground, a single restart of the power unit will be allowed. In this event the total flight time under paragraph 2.1.4. remains unchanged.

#### 6.11.3.4 Flight Time

The timing of a flight starts when the caller announces the initiation of the start-up procedure.

The maximum flight time to complete a flight is 20 minutes.

Any manoeuvres performed after the expiry of the flight time will score zero (0).

#### 6.11.3.5 Flight Schedule

Take-off .....	K = 12
Straight Flight.....	K = 6
Horizontal Circle (Left or Right).....	K = 10
Landing Approach and Landing.....	K = 15
Optional Manoeuvre.....	K = 8
Optional Manoeuvre.....	K = 8
Optional Manoeuvre.....	K = 8
Optional Manoeuvre.....	K = 8
Optional Manoeuvre.....	K = 8
Flight Realism	
a) Model Speed .....	K = 6
b) Stability and Trim .....	K = 6
c) Size of Manoeuvres & Flight Elegance .....	K = 5
<b>Total K-Factor .....</b>	<b>K = 100</b>

**6.11.3.6 Flight Schedule – Optional Manoeuvres**

Five (5) from the following list:

Mountain Landing	K = 8
Quick Stop	K = 8
Tail-in Circle	K = 8
Hover M	K = 8
Obstacle Flight	K = 8
Horizontal Eight	K = 8
Procedure Turn	K = 8
Wingover	K = 8
Triangular Circuit	K = 8
Horizontal Square	K = 8
Personnel and/or Freight Transport	K = 8
Invisible flight with Emergency climb	K = 8
Rescue	K = 8
Cargo Flight	K = 8
Light Demonstration	K = 8
Overshoot	K = 8
Drop Demonstration	K = 8

**6.11.3.7 Manoeuvre Selection**

The competitor must be able to prove that the selected optional manoeuvres are typical for the prototype he has modelled. The selected manoeuvres must be indicated on the Flight Score Sheet in the order that they are to be flown. The order of the manoeuvres is at the discretion of the competitor, but they must be flown in the order that they are indicated on the score sheet. Any manoeuvres flown out of sequence will score zero (0). The selection and order of the optional manoeuvres may be change from one flight round to the next.

**6.11.3.8 Score Reductions:**

- The overall flight score of a model of a prototype which has a retractable undercarriage which flies with the undercarriage extended will be reduced by 10%.
- If the pilot of the prototype is visible flight, a dummy pilot of scale size and shape shall be equally visible during flight in the model helicopter. If such a pilot is not fitted, the total flight score shall be reduced by 10%.

**6.11.3.9 Safety**

The Flight Line Director must ensure that the safety lines are not overflown. In the event of such an overflight, the flight is terminated, and the contestant will be instructed to land. If a model is flown in an unsafe manner or the pilot's control of the model is questionable, he may instruct the pilot to land the model.

## **6.11 ANNEX C – FLIGHT JUDGING GUIDE**

### **6.11C.1 General**

The flight capabilities of the prototype must be taken into account when assessing the flight of the model. All straight flight elements of manoeuvres must be clearly defined before the respective turns are initiated.

The flight judges must not confuse scale helicopter flight with that of the F3C class.

Each manoeuvre must be announced with a clear “Now” at its start and a clear “Complete” when it has ended.

The pilot is allowed to freely choose his position on the flight line for each manoeuvre but must then keep his position for the duration of the manoeuvre.

The manoeuvres may be flown from the left or the right depending on the wind direction. In the interests of safety, any flying behind the Safety Line will be score zero (0) and the pilot will be instructed to land.

### **6.11C.2 Take-off Manoeuvre**

The model stands with a running motor in the middle of the centre circle (Ø1.5 m). The model ascends to an approximate altitude of 60cm and hovers briefly. The model then climbs away at a constant rate in the manner of the full size. After covering a minimum of 10metres, the model turns away through 90°. Where applicable, the undercarriage must be retracted during the initial climb-out. The manoeuvre is complete when the model has completed the turn and covered at least 10 metres and has reached an altitude of at least 5metres.

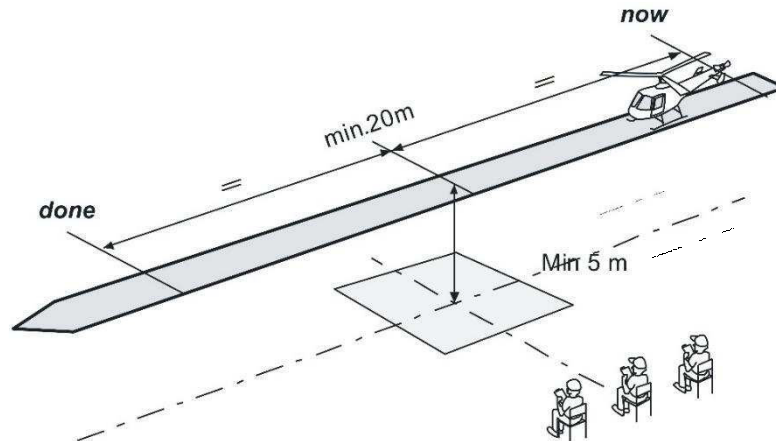
#### **Errors**

1. The model is unstable during the climb-out.
2. No visible hover is maintained at the 60 cm altitude.
3. The model does not maintain a steady climb rate over the entire distance.  
(Climb rate too steep or too shallow)
4. The turn away is not 90°
5. Retractable undercarriage is not retracted.
6. Unrealistic take-off and climb speed.
7. The two climb legs are less than 10m in length
8. The minimum height of 5m is not reached at the end of the manoeuvre.



**6.11C.3 Straight Flight**

The model flies a straight and level flight of at least 20 metres, parallel to the 12 (15) metre line at a minimum altitude of 5 metres. A constant speed must be maintained over the entire distance.

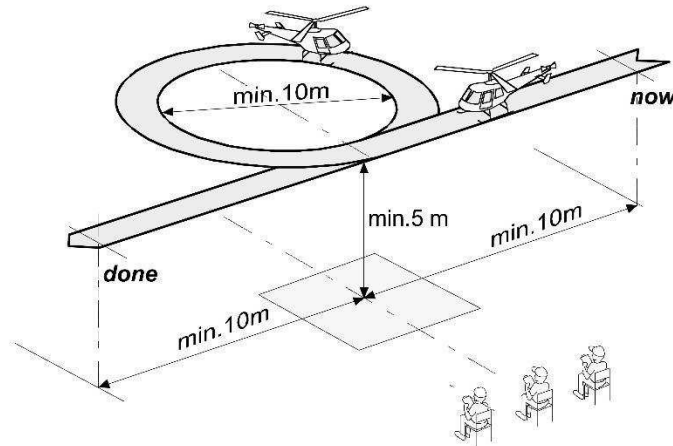
**Errors**

1. Model does not fly straight
2. Model does not fly at a constant height
3. Model does not fly over the 12 metre line
4. Model does not fly parallel to the judge's line
5. Manoeuvre shorter than 20 metres
6. Manoeuvre flown below 5 metres
7. Flight path is not stable
8. Flight speed not constant

#### 6.11C.4 Horizontal Circle (Left or Right)

The model approaches in a straight and horizontal flight on a line that runs parallel to the judge line and is at least 10 metres. At the intersection of the 12-metre line, the model flies a 360° curve and ends the figure identically **to the excursion to the flight.**

The flown circle must have a diameter of at least 10 metres and the altitude of the entire figure must be at least 5 metres.



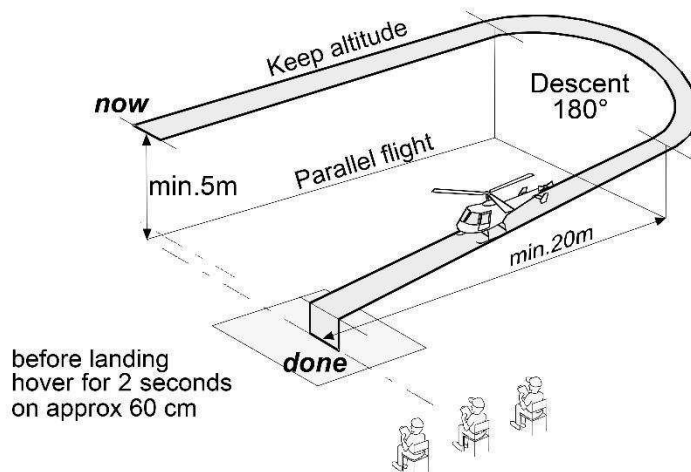
#### Errors

1. The entry and excursion is not at least 10 metres long
2. The flight altitude is not at least 5 metres
3. The entry and excursion is not in the same line
4. The entry and excursion is not parallel to the judges' line
5. Circle is not at least 10 metres in diameter
6. Circle failed, warped
7. The intersection is not in the centre of the 12-metre line

### 6.11C.5 Landing Approach and Landing

The model begins the figure with a transverse approach at a height of at least 5 metres. In the extended axis from the middle of the 12 metre line, the parallel approach begins. The route of the transverse approach is at the discretion of the pilot. This is followed by a 180° turn with simultaneous descent to the center of the middle landing square.

If a landing gear is present on the model, it is extended at the beginning of the descent. Above the circle (Ø1.5 metres), the model hovers for at least 2 seconds and then lands gently and evenly.



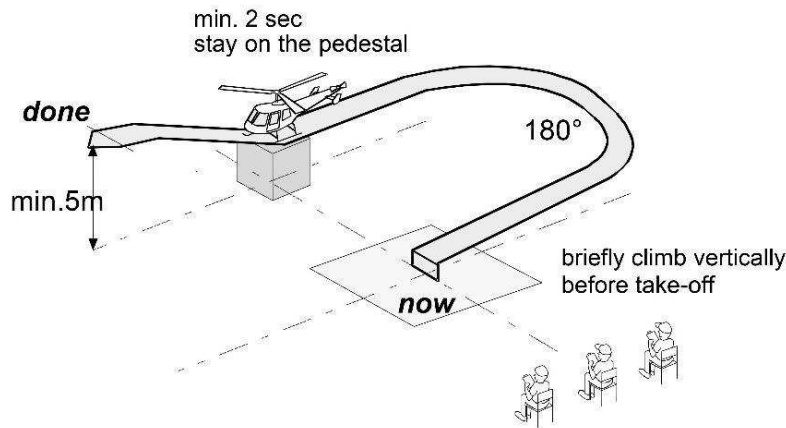
#### Errors

1. The approach does not start parallel to the landing approach
2. The minimum height of 5 meters is not observed at the beginning of the figure
3. The model does not fly at the same altitude up to the 180° turn
4. At the beginning of the 180° turn, the model does not sink evenly and continuously over the entire route. (The sink rate is too steep or too flat)
5. The model does not fly a regular 180° turn
6. Model oscillates and moves during descent
7. At 60cm floating height no visible hold can be detected
8. Model oscillates and moves during descent

## Optional Manoeuvres

### 6.11C.6 Mountain Landing (Optional Manoeuvre)

The model takes off from the middle circle (Ø1.5 metres) and rises in a slow forward flight to an altitude suitable for approaching the point of contact. The approach curve should describe a 180° turn. The model then sets up with both runners or .dem chassis in the "mountains" (pedestal). It remains there for at least 2 seconds and then continues to rise to a height of at least 5 metres.

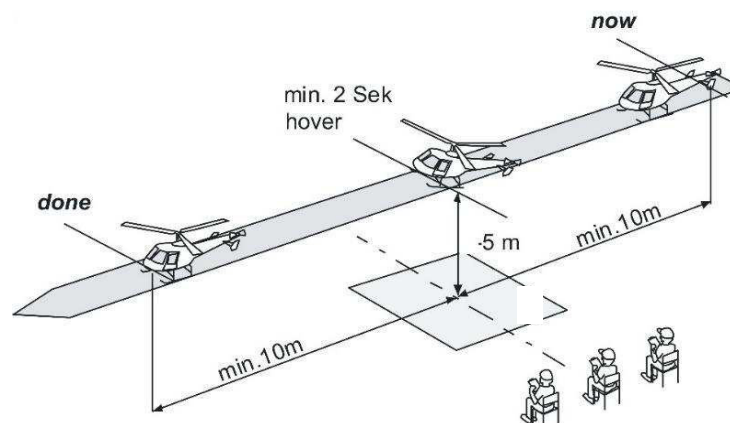


#### Errors

1. The model does not describe a 180° turn from the take-off field to the landing point
2. The model does not remain on the pedestal for at least 2 seconds
3. The model does not remain quiet on the pedestal
4. The model does not land on the podium
5. The model does not reach the minimum height of 5 meters after the stopover

### 6.11C.7 Quick Stop (Optional Manoeuvre)

The model flies at least 10 metres straight ahead at a brisk speed. This at a height of at least 5 metres and parallel to the judges' line. The Quick Stop takes place directly above the centre of the 12x12m square. The Quick Stop must be at least 2 seconds and must be clearly visible. After the stop, a uniform departure of at least 10 metres takes place at the same height of the approach.



#### Errors

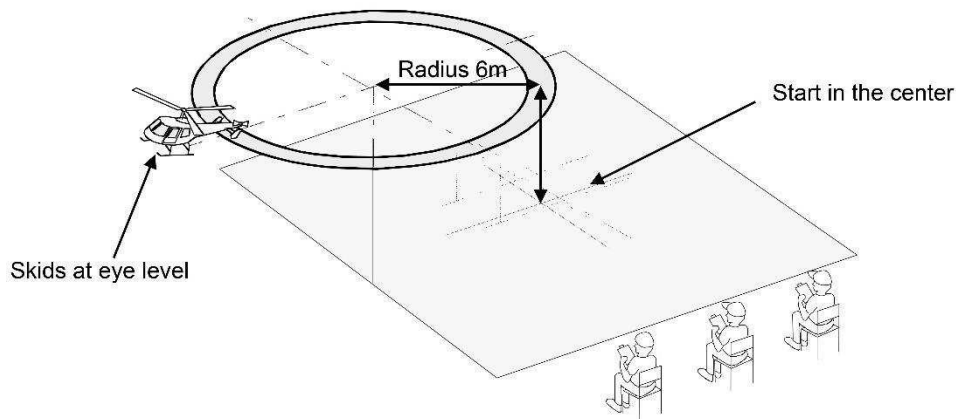
1. The model must not rise or break out sideways during approach and departure
2. The model does not stop in the middle of the 12 metre x 12 metre square
3. The model does not float at least 2 seconds after the visible stop

4. The model tilts to its side or rises away during quick stop
5. The model **erupts** uncontrollably
6. The figure is not executed between 5 metres
7. The arrival and departure is not at least 5 metres high
8. Figure was flown as a "hovering figure" and not at a brisk speed

#### 6.11C.8 Tail-in Circle (Optional Manoeuvre)

Start from the middle circle ( $\varnothing 1.5$  metres) to the pilot's eye level.

Pilot is at the center of the circle. Then a short stay of at least 2 sec. Subsequently, a circular flight with a radius of 6 metres is to be flown. The rear of the model always points to the pilot. After  $360^\circ$ , the model remains for 2 seconds before the descent into the middle circle ( $\varnothing 1.5$  metres) begins.

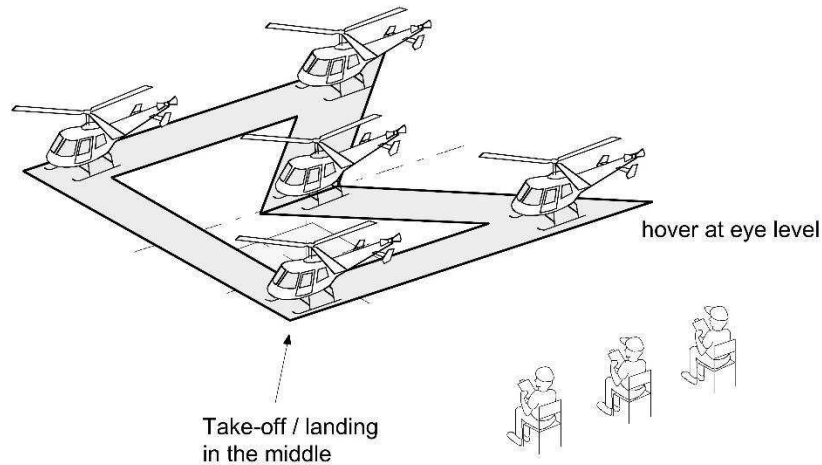


#### Errors

1. The model oscillates or moves during the ascent or descent
2. The rotation is not uniform and correspondingly slow
3. The rear does not point to the centre
4. The altitude is not at eye level
5. The short stay of 2 sec. before and after the tail circle is not present

#### 6.11C.9 Hover "M" (Optional Manoeuvre)

The model starts from a circle ( $\varnothing 1.5$  metres) and climbs evenly vertically up to eye level. There it floats at least 2 sec. With the same height, the model floats in a diagonal line to the right or left corner of the pilot. After 2 sec. with calm hovering, the model moves with the same height in a straight line to the front corner. After 2 sec. the model shifts to the opposite side and again after 2 sec. back to the corner at the height of the pilot. Finally, the model moves in a diagonal line over the middle square, where it again moves 2 sec. remains and then begins with the descent and lands again in the circle ( $\varnothing 1.5$  metres)



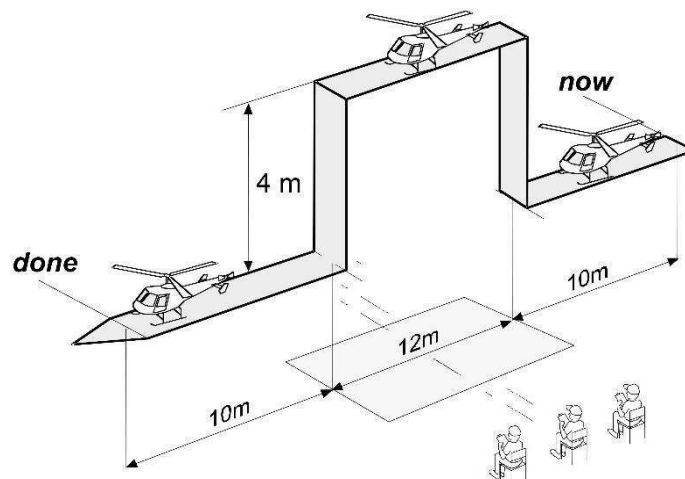
### Errors

1. The model does not push, rotate or move during flight
2. The model does not fly the same height and the same speed
3. The model leaves the course or does not stop over the flags
4. Take-off and landing are not soft
5. The model lands only partially in the center or outside the circle (Ø1.5 metres)
6. The stops of the figure corners are not all identical and at least 2 sec.

#### 6.11C.10 Obstacle Flight (Optional Manoeuvre)

The model flies at eye level and at least 10 metres at the same height. Above the outer point of the 12 metre line, the model hovers at least 2 seconds and then begins with a steady climb of 4 metres. After that, it floats again for 2 seconds and then makes a straight overflight at the same altitude to the opposite line by at least 2 sec. to carry out sustained hovering flight.

Subsequently, the model sinks by 4 metres to eye level and floats again at least 2 sec. Afterwards, the straight-lined onward flight of at least 10 metres takes place at a permanent height.



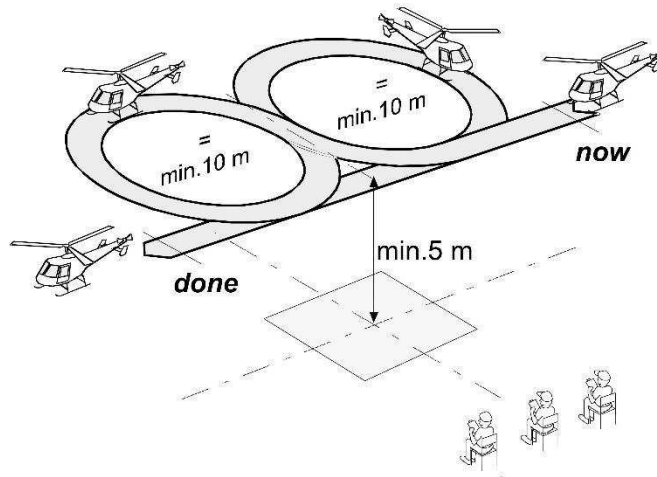
### Errors

1. The model does not fly horizontally or vertically in the designated routes
2. Stops do not take place above the corresponding points
3. The stops are too short and uneven (min. 2 sec)
4. The required ascent and flight altitudes are not adhered to
5. The entrance and excursion is not at the same altitude and not min. 10 meters far

### 6.11C.11 Horizontal Eight (Optional Manoeuvre)

The model approaches in a straight and horizontal flight on a line that runs parallel to the judge line, then flies a 90° curve away from this line, followed by a 360° circle in the opposite direction. A 270° curve in the original flight direction ends the figure on the original flight line.

The intersection, the centre of the figure, must be perpendicular to the entry line and on the centerline of the 12 metre line. This is at least 5 metres above the ground.

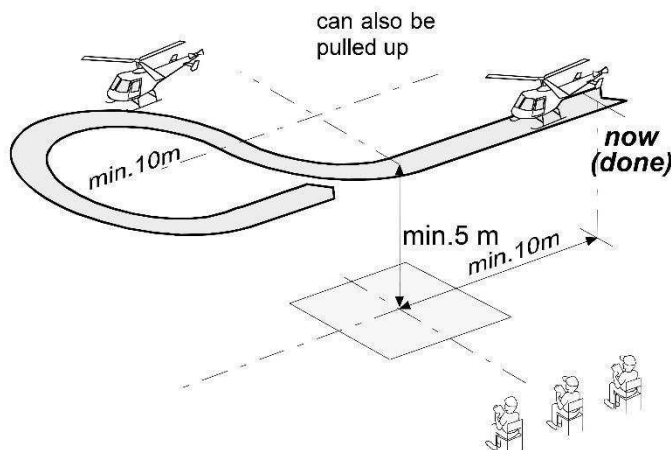


#### Errors

1. Circles are not the same as large (at least 10 meters)
2. Circles failed, warped
3. Height not the same and at least 5 meters
4. Intersection is not in the middle of the 12 meter line
5. Entry and excursion not in the same line
6. Entry and excursion not parallel to the judges' line

### 6.11C.12 Procedure Turn (Optional Manoeuvre)

The model approaches in a straight and horizontal flight on a line that runs parallel to the judges' line. At the intersection of the 12 meter line, the model flies a quarter circle away from this line, followed by a 270° circle in the opposite direction. The excursion takes place on the same line as the flight. The minimum flight altitude must be at least 5 meters. The curve may also be pulled up.

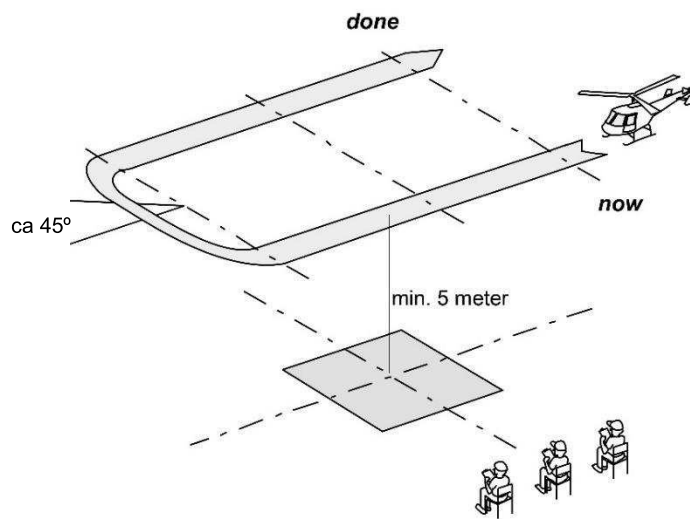


### Errors

1. The circle is not at least 10 meters in diameter
2. The circle has failed, warped
3. The quarter circle does not begin at the intersection of the 12 meter line
4. The entry altitude is not at least 5 meters
5. Entry and excursion is not at least 10 meters
6. Entry and excursion not in the same line
7. Entry and excursion not parallel to the judges' line

#### 6.11C.13 Wingover (Optional Manoeuvre)

The model flies parallel to the judges and over the center of the 12x12 meter square and begins the ascent with a 45° radius after the 12x12 meter square line. The length of the climb is flown at your own discretion. However, a clear ascent phase must be recognizable before the turnaround. The subsequent rotation is flown as a 180° turn. The descent and excursion take place parallel to the ascent and ascent.



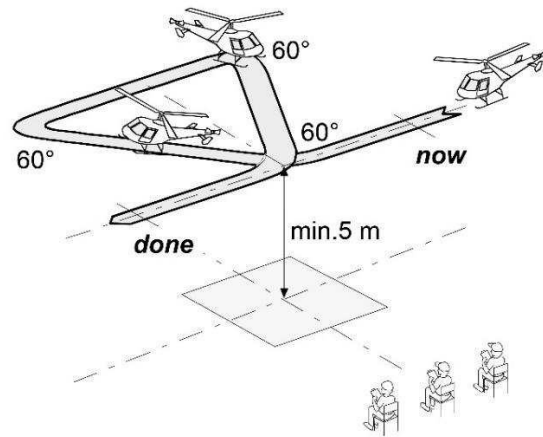
### Error:

1. The model does not fly parallel to the judges and over the intersection of the 12x12 square
2. The radius 45° starts within the 12x12 square
3. The radius is not 45°
4. The turn is not 180° and is not uniform
5. Ascent and descent are not parallel and harmonious
6. One and the excursion are not parallel and harmonious

#### 6.11C.14 Triangular Circuit (Optional Manoeuvre)

The model approaches in a straight and horizontal flight on a line that runs parallel to the judges' line. Then flies away at the intersection of the 12-metre line in an arc of 60°. After at least 10 metres, a 60° curve is followed by a straight flight parallel to the entry. After at least 10 metres, a 60° curve takes place to the intersection. The **excursion** takes place in the same flight position as the flight. The minimum flight altitude of the entire figure is 5 metres. The **triangular straights** must all be of the same length.



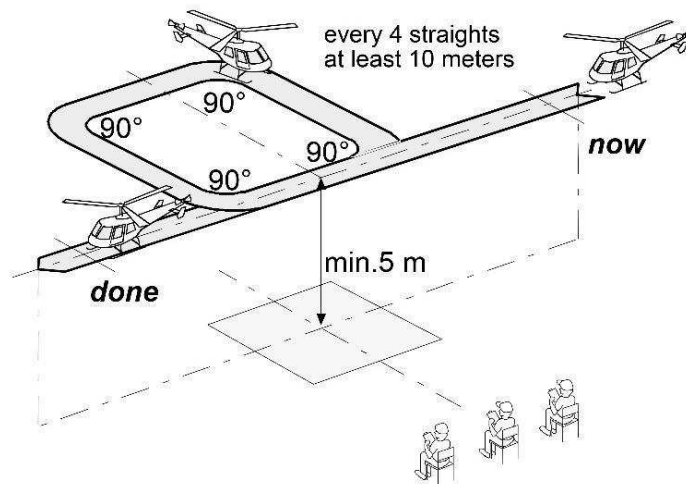


### Errors

1. The entry and **excursion** is not at least 10 metres long
2. The flight altitude is not at least 5 metres
3. The entry and excursion is not in the same line
4. The entry and excursion is not parallel to the judges' line
5. The three 60° curves are not identical and even
6. The sections are unequally long. (Figure warped)
7. The intersection is not in the center of the 12 metre line

### 6.11C.15 Horizontal Square (Optional Manoeuvre)

The model approaches in a straight and horizontal flight on a line that runs parallel to the judge line, then flies at least 5 metres after the intersection of the 12 metre line and then turns in an arc of 90°. After at least 10 metres, a 90° curve is followed by a straight flight parallel to the entry. After at least 10 metres, another 90° curve takes place, which ends after at least 10 metres with a 90° curve parallel to the entry. The **excursion** takes place in the same flight position as the flight. The minimum flight altitude of the entire figure is at least 5 metres. The square **straights** must all be the same length.



### Errors

1. The entry and **excursion** is not at least 10 metres long
2. The flight altitude is not at least 5 metres
3. The entry and **excursion** is not in the same line
4. The entry and **excursion** is not parallel to the judges' line
5. The four 90° curves are not identical and even

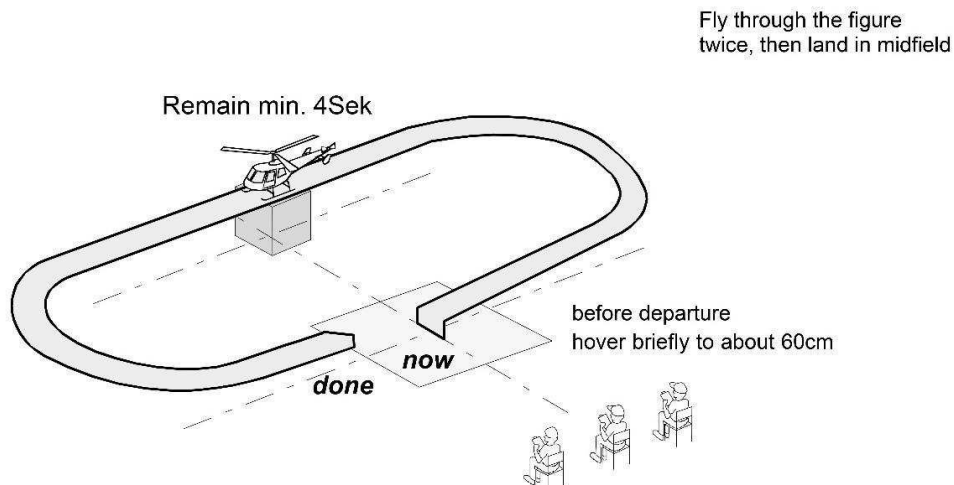
6. The sections are unequally long. (Figure warped)
7. The intersection is not in the centre of the 12 metre line

#### 6.11C.16 Personnel / Freight Transport (Optional Manoeuvre)

Start from the middle circle (Ø1.5 meters) at an initial altitude of 60cm, after a short check the transition to the ascent and departure to the "area of operation" with subsequent stopover in the mountains takes place. (pedestal)

After a short stay of at least 4 sec. in the mountains (pedestal), the flight continues. After another overflight, a new stopover takes place in the mountains. (pedestal) This stopover takes at least 4 seconds.

Afterwards, the return flight with landing in a circle (Ø1.5 metres) takes place

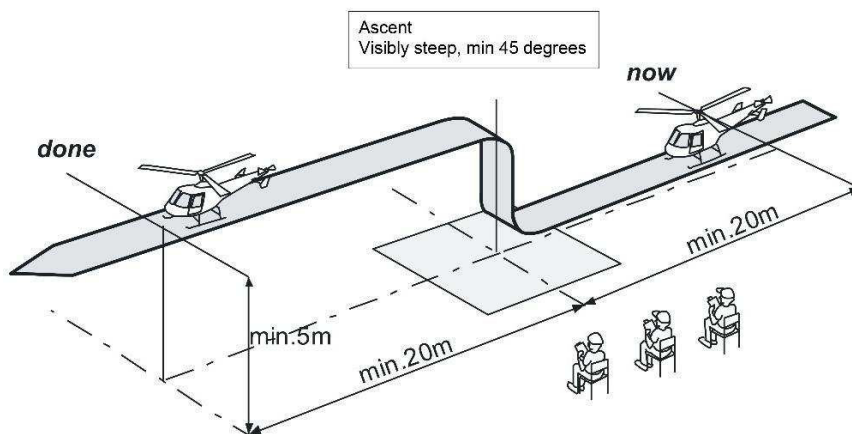


#### Errors

1. Model oscillates and moves during the climb
2. The model does not stand at least 4 sec. on the podium
3. The model does not stand perfectly still on the podium
4. The model does not land on the podium
5. The figure is not parallel to the judge line
6. The landing does not take place in a circle (Ø1.5 metres)

#### 6.11C.17 "Invisible" Flight with Emergency Climb (Optional Manoeuvre)

The helicopter flies parallel to the judges with an entry of at least 20 metres as close as possible above the ground towards the middle square. (Invisible from enemy radar!) An obstacle (circle Ø1.5 meters, fictitious) forces the helicopter to swerve steeply upwards. The helicopter rises to a height of at least 5 metres and continues its flight parallel to the judges. The figure ends after at least 20 metres of straight-line travel.

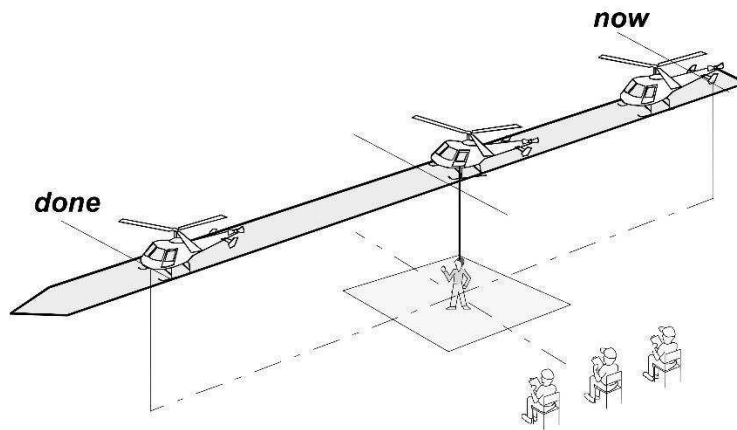


**Errors**

1. The "Invisible Flight" is not constantly low and at the same altitude and direction above the ground
2. The "Invisible Flight" is not parallel to the judges
1. The "Invisible Flight" is not at least 20 metres before the "emergency ascent"
2. The emergency ascent is not immediately in front of the circle (Ø1.5 metres)
3. The model breaks out laterally during emergency ascent
4. The onward flight is not at least 5 metres above ground
5. The figure is not parallel to the judges' line and the 12 metre line
6. The onward flight is not at least 20 metres long

**6.11C.18 Rescue (Optional Manoeuvre)**

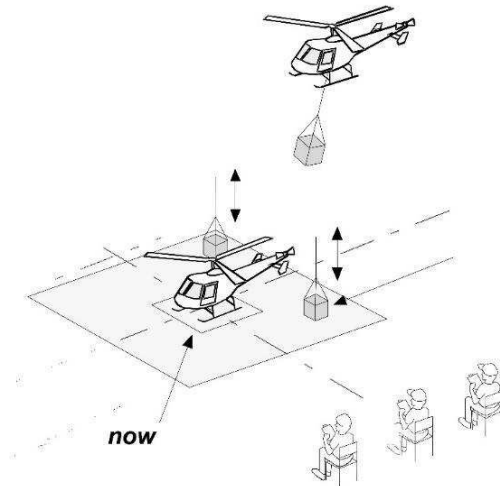
The model flies about 10 metres straight ahead. This between 1.5 and 3 metres in height and parallel to the judges' line. Above the centre of the 12-metre line, the model stops its flight. The rescue is carried out. After the rescue, a uniform departure takes place at the same height and direction as the approach.

**Errors**

1. The entry and exit is not at the same height and direction and at least 10 meters long
1. The figure is not parallel to the judge line
2. The stop and departure from the center of the square is uneven
3. The rescue does not take place above the center
4. The model floats unstable during the rescue

**6.11C.19 Cargo Flight (Optional Manoeuvre)**

The model takes off in a circle (Ø1.5 metres) and flies a freely selectable sightseeing flight. The approach for load transfer or load absorption takes place in the 12x12 metre square. The subsequent landing of the model, on the other hand, takes place in a circle (Ø1.5 metres).



### Errors

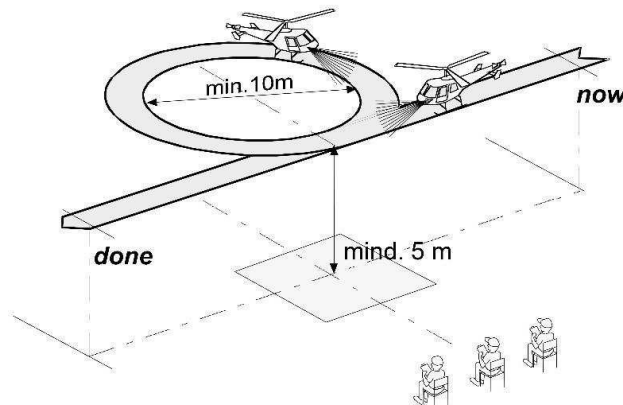
1. The start is not from the circle (Ø1.5 metres)
2. The load picking or setting down does not take place in the 12x12 metre square
3. The model is unstable throughout the figure
4. The landing does not take place in a circle (Ø1.5 metres)

### 6.11C.20 Light Demonstration (Optional Manoeuvre)

The model approaches in a straight and horizontal flight on a line that runs parallel to the judge line and is at least 10 metres. At the intersection of the 12-metre line, the model flies a 360° curve and ends the figure identically **to the excursion to the flight**. During the figure, the lighting of the helicopter is skillfully staged.

The flown circle must be at least 10 metres in diameter and the altitude of the entire figure is at least 5 metres.

The lighting must be switched on in front of the figure.



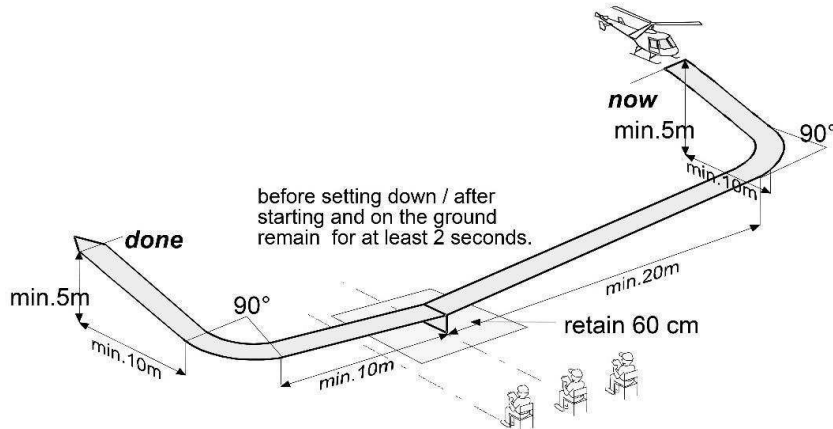
### Errors

1. The entry and **excursion** is not at least 10 metres long
2. The flight altitude is not at least 5 metres
3. The entry and **excursion** is not in the same line
4. The entry and **excursion** is not parallel to the judges' line
5. The circle is not at least 10 metres in diameter
6. The circle has failed and/or warped
7. The intersection is not in the centre of the 12 metre line
8. The lighting was not presented or switched on.

### 6.11C.21 Overshoot (Optional Manoeuvre)

The model flies in a transverse approach of at least 10 metres. Then it turns 90° and begins with the final approach which must be at least 20 metres. The glide angle begins with the transverse approach and ends at about 60cm hovering height above the landing square. If a landing gear is present, it must be extended during the landing approach. Then the model lands in a circle (Ø1.5 metres) and remains there for 2 seconds.

Afterwards it takes off again and remains again for a short moment at about 60cm height. Now the model, **like the model**, is continuously increasing. After at least 10 metres, a 90° curve takes place. If applicable, the landing gear must be retracted during take-off. This figure is finished when the helicopter has turned to the transverse descent and covered at least 10 metres and this at a flight altitude of at least 5 metres.

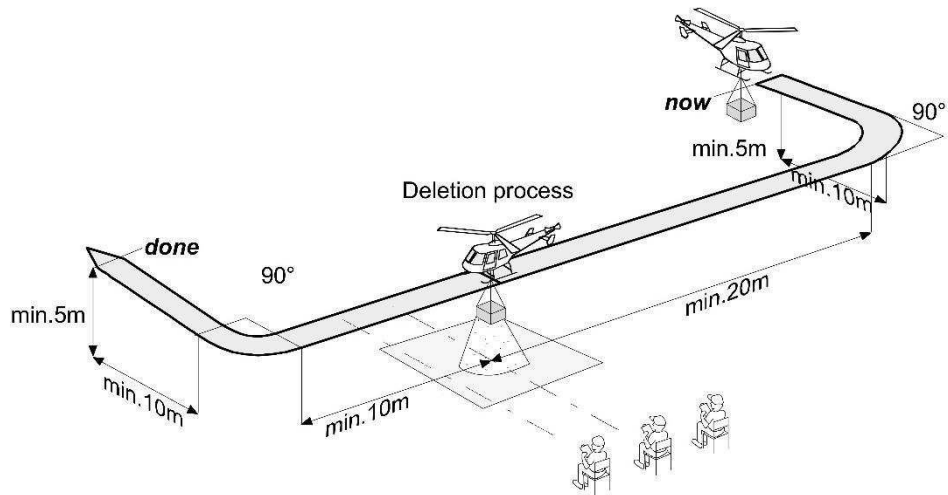


#### Errors

1. The model does not begin the figure with the described landing approach
2. The model does not start the final approach after 90°
3. The transverse flight and landing approach is not at least 10 metres, or 20 metres
4. The model does not sink continuously over the entire distance (The sink rate is too steep or too flat)
5. Model oscillates and moves during descent
6. The retract, if available, is not extended
7. At approx. 60cm hovering height no visible hold can be detected
8. Model oscillates and moves during descent, landing and climbing
9. The model does not rise continuously over the entire route (The climb rate is too steep or too flat)
10. Transverse flight angle is not 90°
11. The retract if available, is not retracted
12. Unrealistic start and climbing speed
13. The descent and transverse flight is not at least 10 meters
14. The minimum height of 5 metres is not reached at the end of the figure

### 6.11C.22 Drop Demonstration (Optional Manoeuvre)

The model flies in a transverse approach of at least 10 metres. Then it turns 90° and begins with the final approach in the direction of centre box, min. 20 metres. Now the **deletion** process takes place directly above the centre. The model then flies at least 10 metres further and turns off with a 90° turn. The transverse descent must be at least 10 metres and end at a height of at least 5 metres.



### Errors

1. The model does not begin the figure with the described transverse approach
2. The model does not start the final approach after 90°
3. The transverse approach is not at least 10 metres
4. The approach is not min. 20 metres
5. The "delete" operation is not performed and is not performed above the center
6. The model does not fly on the same level after the "extinguishing process" and does not make a 90° turn after at least 10 metres and rises to a minimum height of 5 metres

### 6.11C.23 Flight Realism

Scale flying is not an aerobatic or a precision flying contest for scale models and the rationale to be used when assessing display presentation is quite simple; does the flight represent what would be a typical display of the full-size aircraft at an airshow?

The successful display pilot keeps the aircraft in front of the spectators as much as possible. The selection of manoeuvres and the order they are placed in the flight schedule should be such as to achieve a continuous and flowing display. The turn-around manoeuvring should be such as to minimise the effort required to position the model at the correct altitude and track for the next manoeuvre in the schedule. Other than a low altitude fly-by, often seen as a photo opportunity at an airshow, fly-bys and unnecessary circuits to get the model to the starting position of the next manoeuvre should be minimized. The Drive sound (tone and volume) should also be assessed within this score.

This item on the score sheet should be jointly discussed by the flight judges after the flight has been completed and they should attempt to agree on the scores for this item. The Chief Judge must check all the score sheets for completeness after each flight

#### **Model Speed**

- a) The model speed should be correct in relation to the scale of the model as indicated on the score sheet.
- b) If the model flies twice as fast as the scale speed the score for this item should be halved. If it flies three times as fast it should be divided by three, etc.

#### **Stability and Trim**

- a) The model flies well-trimmed with no visible corrections or instability.
- b) The prevailing weather conditions must however be taken into account.

#### **Size of Manoeuvres and Flight Elegance**

The size and type of the manoeuvres should be in keeping with that of the prototype, as well as in keeping with the available space.