FAI Sporting Code

Fédération
Aéronautique
Internationale

Rules and Regulations

Landing appendix GAC

202x Edition
Approved by the FAI General Aviation Commission (GAC)
at the FAI/GAC Meeting, November 202x, in --------, ---------

Maison du Sport International
Av. de Rhodanie 54
CH-1007 Lausanne
Switzerland
Tél. +41 (0)21 345 10 70
Fax +41 (0)21 345 10 77
E-mail: info@fai.org
Web: www.fai.org

TABLE OF CONTENTS

1. INTRODUCTION

This landing appendix is provided to create a comprehensive set of landing rules for all the flying competitions hosted by the General Aviation Commission (GAC), and may be included as an appendix in the following rules of the GAC:

Rules and regulations – Precision Flying
Rules and regulations – Air Rally Flying
Rules and regulations – Air Navigation Race

These rules shall be under the control of the Precision Flying subcommittee.

2. GENERAL RULES

The object of the landing test is to assess the pilot's skill in landings of different types.

2.1. TYPES OF LANDINGS

The follow types of landing may be included into the competitions with the following definitions:

2.1.1. LANDING 1: NORMAL LANDING

A landing where the use of power, spoilers, flaps or sideslip is at the discretion of the pilot.

2.1.2. LANDING 2: IDLE POWER LANDING

Abeam the zero line, the engine is throttled back to idle power. Power shall not be used thereafter. Flaps, spoilers and sideslip may be used at the discretion of the pilot.

2.1.3. LANDING 3: IDLE POWER LANDING WITHOUT FLAPS

Abeam the zero line, flying with flaps fully retracted, the engine is throttled back to idle power. Power, spoilers and flaps shall not be used thereafter. Sideslip may be used at the discretion of the pilot.

2.1.4. LANDING 4: OBSTACLE LANDING

The competitor will make a landing after passing a marked obstacle 2 meters high, placed 50 meters before the touchdown line. Use of power, spoilers, flaps or sideslip is at the discretion of the pilot. Approaches for the obstacle landing, where the wheels are lower than the obstacle before passing over it, are not permitted (creeping).

Anywhere the word spoilers are mentioned the meaning is any sort of speed-brakes or air-brakes.

2.2. CIRCUITS AND LANDING

2.2.1. Circuits may be left or right hand as defined by the competition management. Circuits for landings 1 and 4 must be above 500 feet QFE. Circuits for landings 2 and 3 must be not less than 1,000 feet or more than 1,200 feet QFE.

2.2.2. The minimum cloud base for power landings will be 500' AGL and idle power landings 1000' AGL. In both cases the visibility should be at least 1.5 kilometres. If the minima are below those legally required in the host country, then the host country's rules must be applied**.**

2.2.3. All landings are to be made as close as possible to the zero area, within a competition specific strip. The strip will be marked. (see section 7)

2.2.4. In the event of a competing aircraft not touching the ground in any of the landing tests or landing outside the strip, ~~he~~ the competitor will be penalized. (see penalties section 6)

2.2.5. All landings are to be video recorded, to assist the jury.

2.2.6. A crosswind condition shall exist when the crosswind component of the wind, (that is the component at right angles to the runway in use), is 8 kts or more.

2.2.7. Wind direction and speed shall be measured close to the zero-line by a suitable anemometer at 2 meters high and recorded for each landing. This will provide factual evidence in the case of one-wheel landings, which are allowed only when the chief landing judge has declared a crosswind condition.

2.2.8. The chief landing judge will decide when crosswind condition exist. Competitors will be advised by radio, and a conspicuous flag signal will be placed 30 meters before the zero line to advise competitors.

2.2.9. The maximum allowed tailwind component is 3 kts.

2.2.10. If the wind speed near the ground is more than 25 kts, gusts included, flying will be stopped. If the crosswind component, gusts included, exceeds the lowest published maximum demonstrated crosswind or a stated limit, flying will be stopped on the runway in use. The maximum crosswind component for the competition will be announced before the competition starts.

2.3. AIRCRAFT

2.3.1. All wheels, with the exception for the tail-wheel in the case of tail-wheel aircraft, must be marked by two perpendicular white lines (width about 5cm) on both sides of each wheel.

2.3.2. All aircraft main wheel covers (spats) should be removed prior to the landing competition. Any modification temporary or permanent, to the wheels, undercarriage, oleos or shock absorbers which is not approved by the manufacturer and the certification authority, is not permitted and may result in disqualification.

3. DEFINITION OF LANDINGS

3.1. NORMAL LANDINGS

3.1.1. First touchdown must be on both main wheels with a maximum distance of five (5) meters between main wheel 1 and main wheel 2, except when the international chief judge has decided that a crosswind condition exists. If the first touchdown is in or after the zero area and the distance between the touchdown of the main wheels is 5 meters or less, the touchdown point for measurement is the touchdown of the first main wheel. If the distance is more than 5 meters, the touchdown point for measurement is the touchdown of the second main wheel.

3.1.2. The nose wheel must be off the ground at first touchdown. Tail wheel aero planes must be landed in a configuration where the tail is lower than the horizontal attitude.

3.1.3. Touchdown on or after the zero area is measured when the aircraft is rolling on the ground after all bounces. In case of bounces before or after the line, the touchdown that is counted is that one which gives the highest penalty.

3.1.4. An aircraft is considered bouncing when both main wheels (or a sole main wheel) leave the ground after any touchdown, to a height of more than the diameter of the main wheel, or for a distance more than 15 m. A jump into a 5-meter box must be calculated this way: Box meters minus 4 meters, minus the measured lift-off point before.

3.1.5. In the case of any part of the aircraft touching the ground before the zero area, the distance measured will be the distance from the touchdown point to the zero line. In the case of a tail wheel landing which is judged to be three-pointer landing (the tail wheel may roll on the ground for a maximum distance of five (5) meters before the main wheels), the touchdown point of the main wheels shall be measured.

3.1.6. Touchdown on the upwind main wheel only is allowed when crosswind exist.

3.1.7. Power has to be completely retarded at touch down and only sufficient power is permitted after the aircraft has come to a complete stop, to continue the roll to the end of the landing strip. After leaving the landing strip, the aircraft shall clear the runway.

3.1.8. All approaches and landings must be considered as being safe. If the international chief judge, competition director or his appointed representative is of the opinion that an approach or landing is deemed as dangerous, flying will be stopped until the jury has made a decision.

3.2. ABNORMAL LANDINGS

Abnormal landings in all four types of landing are defined thus:

3.2.1. Nose wheel not off the ground / touching the ground before the main wheel.

3.2.2. A tail wheel aircraft not in a configuration with the tail below the horizontal.

3.2.3. One main wheel off the ground at the initial touchdown, without authorized crosswind conditions, to a height of more than the diameter of the main wheel.

3.2.4. In crosswind conditions touchdown on downwind main wheel only.

3.2.5. Any part of the aircraft other than the wheels touching the ground.

3.2.6. Retraction of flaps inside landing strip before touchdown.

3.2.7. Touchdown with locked wheels.

3.2.8. One or both main wheels leave the ground, while nose wheel remains on it.

3.2.9. Any abnormalities after any bounce (as defined in points 1-8 above) must be considered as abnormal landing.

4. DISCIPLINE SPECIFIC RULES

4.1. PRECISION FLYING

4.1.1. The landing test will be run as a separate event to enable the participation of all international judges to judge the event.

4.1.2. An official landing practice should be organized in order to run a final check of organization, staff, and systems involved in judging of landings. The two landings per pilot are required: Obstacle Landing and Idle power Landing without Flaps.

4.1.3. Landing briefing must be attended by jury, judges, team managers and all competitors.
The object being to define sequence of landings, procedures, circuit discipline, signals, etc.

4.1.4. Each landing is conducted as a full stop landing. Depending on the situation, the competition director may authorize touch-and-go landings.

4.1.5. For the calculation of the results in the case of a tie, the competitor with the lowest number of penalties in the first of Landing 3 (Idle power landing without flaps) or Landing 2 (Idle power landing) or Landing 4 (Obstacle landing) will be awarded the place.

4.1.6. If there is a continuing tie multiple winners will be declared.

4.2. RALLY FLYING

4.2.1. Each landing will be from a normal approach ~~where the use of power, flaps, spoilers and sideslip is at the discretion of the pilot~~ and as a normal landing (2.1.1)

4.2.2. If the tailwind component exceeds 5 knots, the pilot will be informed by radio, and the chief landing judge will attempt to change the landing direction. He will inform the competition director if this is not possible, in which case the landing test of that stage will be cancelled. Conflict with 2.2.9

4.3. ANR

4.3.1. The video recordings of the landing may be used by Chief Judge and two independent International Judges for checking the results of landings before final judging of the landings. After final judging, the video recordings of the landings may be used by the jury when dealing with protests and may be shown or given to the competitor or team manager.

5. ORGANISATION RULES

5.1. TRAINING PRACTICE

5.1.1. Landing practice for each competitor may be limited to not more than 2 landings after a navigation practice. Landing practice may be limited in the week prior to the competition week. Each competitor should be allowed 4 landings, in practice, in the competition week and prior to the start of the championship. An appropriate schedule will be prepared by the competition director.

5.1.2. Daily flying should be restricted to 08.00 - 18.00

5.1.3. Training practice must not be interrupted for display or show practice.

5.2. LANDINGS LAYOUT

5.2.1. In locating the position of the landing strip on the runway, consideration should be given to the position of the judges, video camera operators and spectators. Neither judges nor video camera operators should be looking into the sun.

5.2.2. There should be clear distance markers along the runway.

5.2.3. Landing officials should be placed about 5 meters outside the distance markers and be prepared to run along these markers to define the touchdown point. One landing official should be permanently stationed opposite the zero line.

5.2.4. It is important that the zero area is clearly marked. The jury will check the visibility of all markers prior to the landing competition.

5.2.5. Team managers only will be allowed to observe the landings from a position 15 meters opposite the touchdown line if safety conditions and aerodrome regulations so permit.

5.2.6. Spectators, conditions permitting, should not be allowed nearer than 30 meters of the landing strip. If possible, the spectator area should be fenced off for safety reasons.

5.2.7. Aircraft ground movements and traffic patterns must be carefully planned and briefed to the pilots. Useful aids are maps or sketches with detailed information.

5.2.8. Suitable marshals and ground controllers should be located in prominent positions, the ground controller being in direct communication with the competition director.

5.2.9. The competition director determines the starting order for the landing competition. His decisions are based on factors such as flight safety. Circumstances and capability permitting, the competition director is allowed to change this order for promotional purposes.

5.2.10. With good management, it is possible to have 3 - 4 competitive aircraft active in the circuit at any one time.

5.2.11. To provide a steady flow it will be necessary to judge approximately 30 landings per hour. A 10-minute break session for the judges in each hour and a 15-minute break session between each type of landing is advised.

5.2.12. Consideration should be given to a system of lights or ground signals on the final stages of approach, to signify by either red or green lights whether the competitor is cleared to land, or ~~he~~ the competitor must go around again.

5.2.13. Only the international chief judge will be responsible for communicating the results of the competitor's landing to the secretary for entering into the competitor's record sheet in English, being the competition language.

5.2.14. Video recordings of landings must be arranged, as they are vital to enable the jury to come to a decision, in the case of a protest, based on factual evidence. The video crew should comprise at least two hand-held video cameras located about 10 meters from the runway and positioned about 20 meters before and after the "0" line. Video crews must be trained before the competition to provide the best camera location and viewing angle. A continuous following of the wheels, before, during and after the touchdown, is essential and runway markings must be visible on the videotape to enable final judgment on touchdown point and landing techniques. The video recorders must provide at least one hundred frames per second (100 fps) recording.

5.2.15. The video playback must be displayed on a TV set with a minimum 21" screen. The equipment must include the facility both of "freezing" and advancing frame-by-frame without picture interference

5.2.16. ~~The host nation will ensure that a reserved area is available, opposite the touchdown line, for team managers only. It will be placed not less than 15 meters from the edge of the runway~~ (same in 5.2.5).

5.2.17. An electronic measurement and recording system previously approved by GAC must be used. It must be in conjunction with visual judging. Only in the event of failure of the electronic recording system visual judging will be used for that group.

5.3. INTERNATIONAL JUDGES AND OPERATIONAL OFFICIALS

5.3.1. The landing competition will be run under the control of the chief landing judge supported by the official responsible for landings. Each participating country will be invited to provide international judges to officiate under the chairmanship of the chief landing judge.

5.3.2. The chief landing judge will be responsible for the placing of the individual judges and for the recording of the results of each competitor. The competition director will not participate in judging the landings in any way whatsoever.

5.3.3. Judging comments must be made in the competition language (English).

5.3.4. In the event of the judges not being able to reach a definite decision regarding any landing, then the international chief judge should make the final decision. In the case of an abnormal landing the international chief judge must consult at least two other international judges.

5.3.5. It should be made perfectly clear that although the jury will be present in the same locality and making their own notes, these are only usable as supporting evidence, should they be required to decide a protest. At no time will they seek to influence any decision made by the judges. However, the president of the jury may, if the opportunity occurs, offer advice to the international chief judge if requested.

5.3.6. Para 5.3.5 above does not prevent the jury disqualifying any competitor who is guilty of dangerous flying.

6. SCORING / PENALTIES

6.1. RALLY FLYING

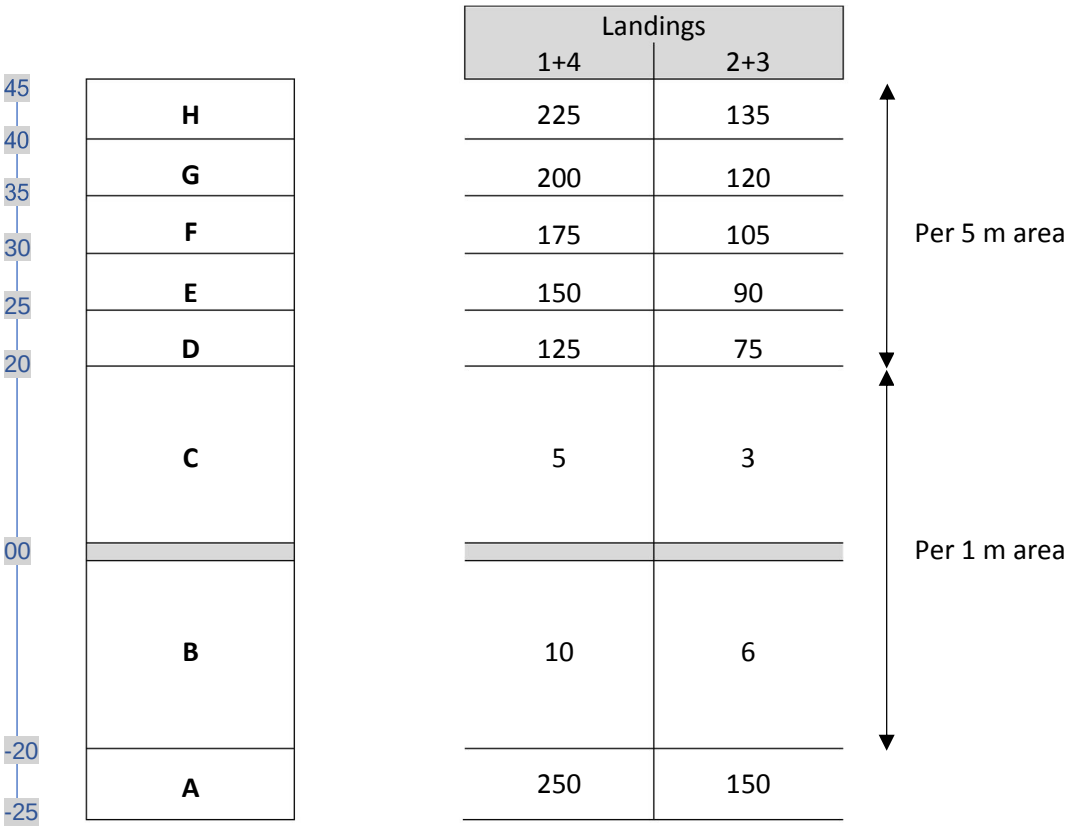
White line	0
Area "A"	10
Area "B"	20
Area "C"	30
Area "D"	40
Area "E"	60
Area "F"	80
Area "G"	100
Area "H"	120
Area "X"	60
Area "Y"	120
Landing out of the landing box or rolling out of the box to the left or right	200
Applying power after touchdown, within the landing box	50
Go around without touching ground, (without being forced)	200
Go around instead of full stop	200
No attempt to land at designated landing field	300
Abnormal landing	150
Penalties for abnormal landings will be given in addition to other landing; however, the maximum per landing will be	300

6.2. PRECISION FLYING / ANR

6.2.1. Maximum penalties

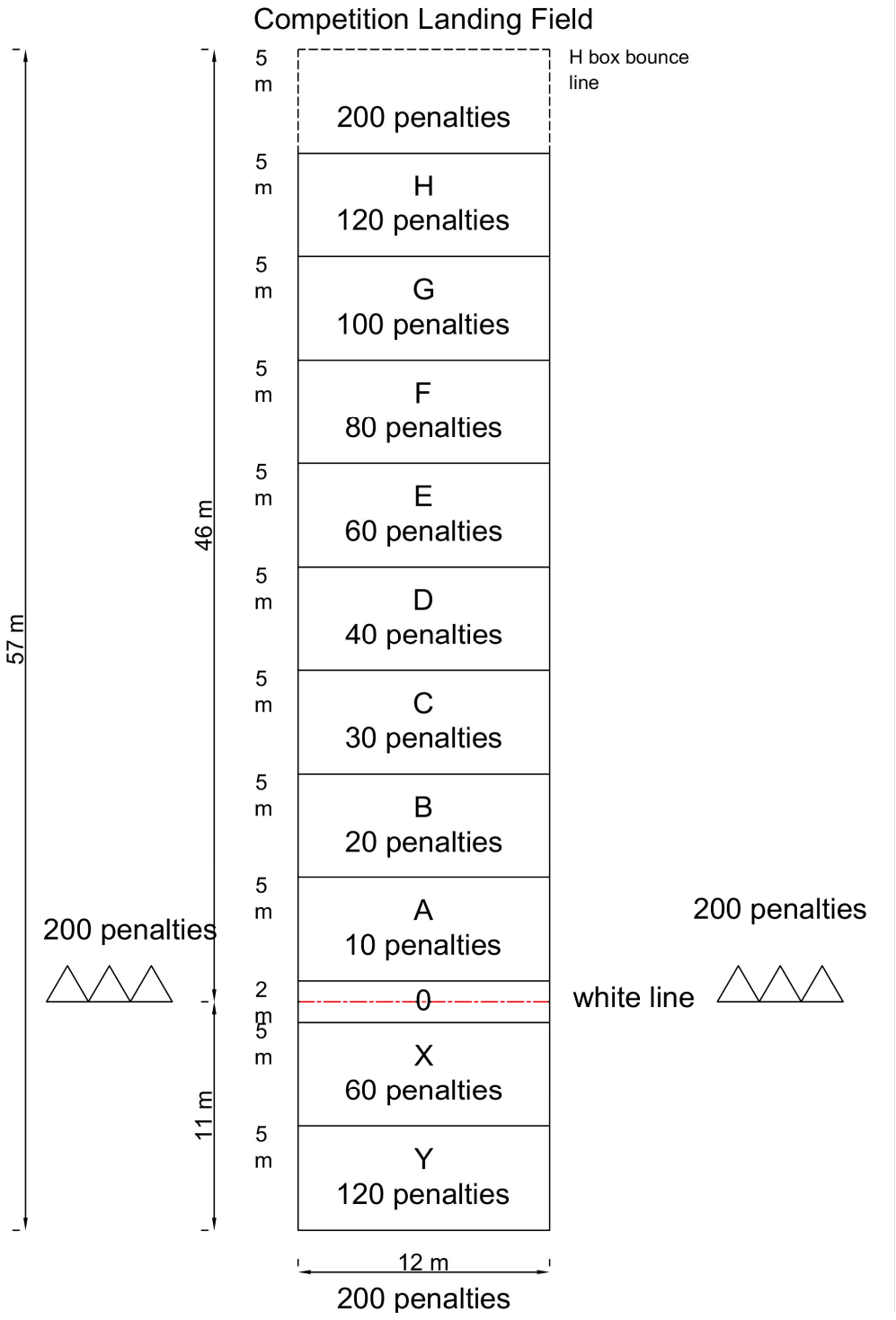
	Landing number			
	1 Normal	2 Idle	3 Idle no flaps	4 Obstacle
Maximum penalties per landing	400	200	200	400
Outside the strip or no landing	300	200	200	300
Abnormal landing	200	200	200	200
Rolling out of the landing strip to the side	200	150	150	200
Power on the ground in the strip	50	50	50	50
Non permitted use of power (in the air)		200	200	
Non permitted use of flaps or spoilers (in the air)			200	
Touching, destroying the obstacle or "creeping" over obstacle				400

6.2.2. Penalty information for distance



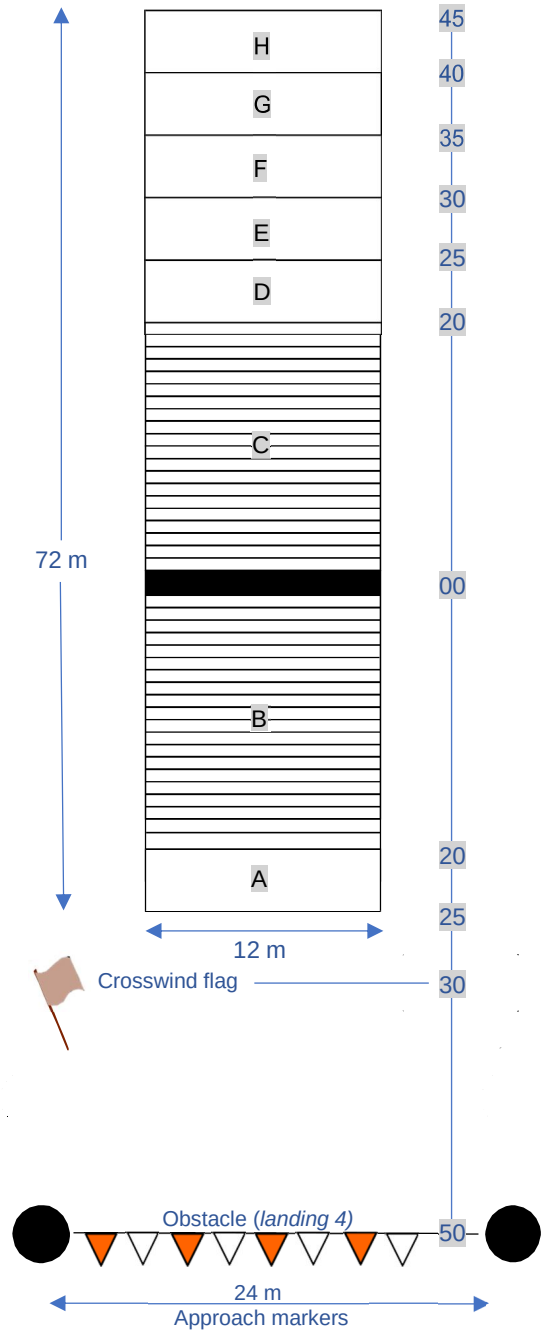
7. LANDING BOX

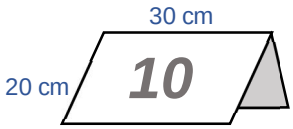
7.1. RALLY FLYING



Replace with editable original from Rally Flying Rules

7.2. PRECISION FLYING / AIR NAVIGATION RACE





Markers

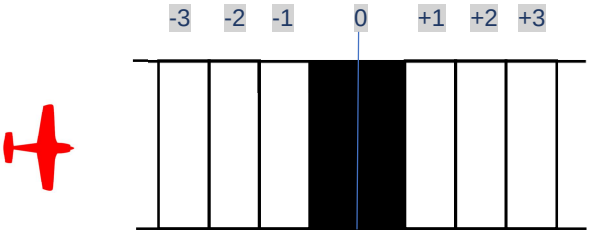
On both sides of the runway, to assist judges and video crew, there shall be runway markers at each 5- meter area till +20 area opposite the correct metre area.
Markers shall be placed per 5-metre area beyond the –20 and +20 metres area in the middle of the correct area

The landing strip

Each metre must be marked by paint or chalk (on grass) from –20 to +20 metre area, and outside that zone every 5 metre area (see picture). The zero area must be clearly marked.

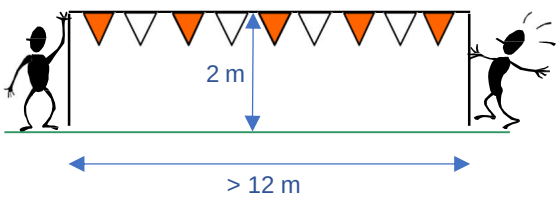
Zero area specification

There is an imaginary zero line. The zero area is per full metre on each side of this line. Outside the zero area scoring will be done per one meter area till the –20 and +20 meter area and beyond this per 5 meters till the limit of the landing strip.



Approach markers

Two markers will be clearly positioned 24 meters apart at the 50 metres in front of the middle of the zero area. Aircraft have to approach in between these markers on their final approach path. Approaching from outside may be considered as dangerous.



Obstacle specification

This is positioned 50 meters in front of the middle of zero area. Thin cotton or nylon line with cloth flags in colour.
Do not tie the line to poles! It should slip off easily.

The height (2 meters) should be checked at the runway centre line.

8. DOCUMENT HISTORY

Version	Date	Author	History
1.0	2020-07-10	Allan Hansen	First combined rules with minor changes (structure, figures, formatting, etc.)