



# FAI Sporting Code

*Fédération  
Aéronautique  
Internationale*

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## Section 4 – Aeromodelling

### Records

Previously ABR Section 4C: Part 2

2017 Edition

Effective 1<sup>st</sup> January 2017

MODEL AIRCRAFT AND AEROSTAT RECORDS  
SPACE MODEL RECORDS

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1	FAI Statutes, .....	Chapter 1,	para. 1.6
2	FAI Sporting Code, Gen. Section, .....	Chapter 4,	para 4.1.2
3	FAI Statutes, .....	Chapter 1,	para 1.8.1
4	FAI Statutes, .....	Chapter 2,	para 2.1.1; 2.4.2; 2.5.2 and 2.7.2
5	FAI By-Laws, .....	Chapter 1,	para 1.2.1
6	FAI Statutes, .....	Chapter 2,	para 2.4.2.2.5
7	FAI By-Laws, .....	Chapter 1,	paras 1.2.2 to 1.2.5
8	FAI Statutes, .....	Chapter 5,	paras 5.1.1, 5.2, 5.2.3 and 5.2.3.3
9	FAI Sporting Code, Gen. Section, .....	Chapter 4,	para 4.1.5
10	FAI Sporting Code, Gen. Section, .....	Chapter 2,	para 2.2.
11	FAI Statutes, .....	Chapter 5,	para 5.2.3.3.7
12	FAI Statutes, .....	Chapter 6,	para 6.1.2.1.3

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## CIAM FORMS LIST

*The following forms, applicable to Records, are downloadable from the "Documents" section of the CIAM website <http://www.fai.org/ciam-documents>.*

- Application for Record Confirmation - Model Aircraft
- Application for Record Confirmation - Model Aerostats
- Checklist Record Dossier - Model Aircraft
- Application for Record Attempt Confirmation - Space Models
- Personnel - Space Models
- Duration Record Attempt Data - Space Models
- Altitude Record Attempt Data (four sheets) - Space Models
- Record Dossier Check Form - Space Models

**THIS VOLUME INCLUDES THE FOLLOWING AMENDMENTS TO THE VOLUME ABR EDITION 2016**

<b>Paragraph</b>	<b>Plenary meeting approving change</b>	<b>Brief description of change</b>	<b>Change incorporated by</b>
		<p>Revision of the 'Volume ABR' with a new structure of the document. The part relative to Model Aircraft and Aerostat records has been removed to this dedicated Volume. The part relative to Space Model Records has been incorporated into this Volume. Numbering has changed as a consequence.</p> <p>References to Volume ABR have been amended to the applicable reference in Volume CIAM General Rules. These changes have been marked with double lines.</p> <p>Each form, template, table and list downloadable from the "Documents" section of the CIAM website is mentioned in the appropriate paragraph of the present CIAM Records Volume.</p>	
<p><b>There were no amendments to Section 4C, Part 2 Records or Space Records at Plenary 2016.</b></p>			

## **VOLUME CIAM RECORDS**

### **PART ONE – RECORDS FOR MODEL AIRCRAFT AND AEROSTATS**

- 1.0 Classification of Records for Model Aircraft and Aerostats
- 1.1 World Class Records for Model Aircraft and Aerostats
- 1.2 General Specifications of Model Aircraft and Aerostats for Record Attempts
- 1.3 Special Rules for Duration Records
- 1.4 Special Rules for Distance Records in a Straight Line
- 1.5 Special Rules for Speed Records in a Straight Line
- 1.6 Special Rules for Speed Records in a Closed Circuit
- 1.7 Special Rules for Speed Records in Circular Flight
- 1.8 Special Rules for Altitude Records
- 1.9 Special Rules for Distance in Closed Circuit records
- 1.10 Special Rules for Aerostats
- 1.11 Dossier of a Record Attempt
- 1.12 Supporting Data

### **PART TWO – RECORDS FOR SPACE MODELS**

- 2.0 Classification of Records for Space Models
- 2.1 World Class Records for Space Models - General
- 2.2 Surpassing Previous Record
- 2.3 Homologation Requirements
- 2.4 Homologation Data
- 2.5 Justification

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**PART ONE – RECORDS FOR MODEL AIRCRAFT and AEROSTATS****1.0 CLASSIFICATION OF RECORDS**

The FAI recognises World class records in the categories of model aircraft and aerostats listed in the following tables.

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SUB CLASS		CATEGORY (Type of model aircraft)	GROUP (Method of propulsion)	TYPE			
				Duration	Distance in a straight line	Gain in altitude	Speed
<b>F1 FREE FLIGHT</b>	Open	Glider	n/a	101	102	103	n/a
		Aeroplane	Extensible Motor	104	105	106	107
	Piston Motor		108	109	110	111	
	Open	Indoor Aeroplane	Extensible Motor	<b>DURATION</b>			
				<b>Ceiling Cat I &lt;8M (a)</b>	<b>Ceiling Cat II 8-&lt;15M (b)</b>	<b>Ceiling Cat III 15-&lt;30M (c)</b>	<b>Ceiling Cat IV &gt;30M (d)</b>
				115 (a)	115 (b)	115 (c)	115 (d)
				125 (a)	125 (b)	125 (c)	125 (d)
				116 (a)	116 (b)	116 (c)	116 (d)
				117 (a)	117 (b)	117 (c)	117 (d)
				118 (a)	118 (b)	118 (c)	118 (d)
	F1N	Indoor Glider	n/a	118 (a)	118 (b)	118 (c)	118 (d)
	Open	Indoor Aeroplane	Extensible Motor	<b>DURATION IN COMPETITION</b>			
				One Flight		Two Flights	
119				120			
F1D			122		123		
F1L			122		123		
<b>F2 CONTROL LINE CIRCULAR FLIGHT</b>	Open	Aeroplane	Piston Motor	<b>SPEED</b>			
				<b>SWEPT VOLUME cm<sup>3</sup></b>			
				0,00 to 1,00	1,01 to 2,50	2,51 to 5,00	5,01 to 10,00
	130		131	132	133		
			Speed in Competition				
			134*				
Open		Reaction Motor	135				
			<b>TEAM RACE (Race Time)</b>				
F2C		Piston Motor	100 laps - 136*		200 laps - 137*		

\* Only in World Championships & Continental Championships  
Reference paragraph 2.1.4.

cont/...

## 1.0 CLASSIFICATION OF RECORDS

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SUB CLASS		CATEGORY (Type of model aircraft)	GROUP (Method of propulsion)	TYPE							
				Duration	Distance in a straight line	Gain in altitude	Distance goal and return	Speed	Distance in a closed circuit	Speed in a closed circuit	
F3 RADIO CONTROL FLIGHT	Open	Aeroplane	Piston Motor	141	142	143	144	145	146	147	
		Seaplane		148	149	150	151	152	153	154	
		Glider	n/a	155	156	157	158	159	160	161	
		Helicopter	Piston Motor	162	163	164	165	166	167	168	
	F3D Aeroplane	In Competition – 10 laps							83*		
F5 RADIO CONTROL FLIGHT	Open	Aeroplane	Electric Motor S	171	172	173	174	175	176	177	
			Electric Motor SOL	185	186	187	188	189	190	191	
			Electric Motor COMB	192	193	194	195	196	197	198	
		Helicopter	Electric Motor	199	200	201	202	203	204	205	
	F5D Aeroplane	In Competition – 10 laps							90*		
* Only in World Championships & Continental Championships. Reference paragraph 2.1.4.											
F7 RADIO CONTROL FLIGHT	Open	Airships		Outdoor							
					206	207	208	209	210	211	
			Piston Motor						Indoor		
					212	213	214				
				Outdoor							
					215	216	217	218	219	220	
		Electric Motor						Indoor			
				221	222	223					
		Hot Air Balloons	n/a	Outdoor							
				Duration	224	Distance in a straight line			225		
Gain in altitude	226			Stationary Flight Duration			227				
Indoor											
	Duration	228	Stationary Flight Duration			229					

\* Only in World Championships & Continental Championships  
Reference paragraph 2.1.

**1.1. WORLD CLASS RECORDS FOR MODEL AIRCRAFT and AEROSTATS**

1.1.1. The FAI recognises World class records in the categories of model aircraft, aerostats and space models. Records for Space Models are dealt with in Part Two of this Volume.

1.1.2. Claimant(s) shall confirm that the submitted record claim is for a model aircraft, aerostat or space model as defined in CIAM General Rules B.1.

**1.1.2. Holder(s) of Records**

A World record may belong to one person or a team. Where the record is in the name of more than one person, FAI will list those persons in alphabetical order, unless otherwise directed by the claimants' NAC.

**1.1.3. Builder of the Model Aircraft or Aerostat**

In all records, the claimant(s) must be the builder(s) of the model aircraft or aerostat flown in the attempt, except where the competition rules for the class exempt that class from rule B.3.1.a). The claimant(s) has/have to confirm this by his/their signature/s on the form "Application for Record Confirmation" which is downloadable from "Documents" section of the CIAM website <http://www.fai.org/ciam-documents>.

**1.1.4. Categories of World Records**

a) There are three categories of World Records:

i) Records performed with special record model aircraft or aerostats under the specifications given in paragraph 1.2. (Open Records)

ii) Records performed with model aircraft built to competition specification but with flights not necessarily in a competition (Specific Model Aircraft). These records can be set in classes F1D, F1L, F1M and F1N and in these classes the record may belong only to one person, not a team.

iii) Records performed in regular competitions with model aircraft and competitions defined in Sporting Code CIAM General Rules (Competition Records).

b) In Free Flight competition, duration records can be set in classes F1D and F1L and in these classes the record may belong only to one person, not a team.

c) In Control Line competition the following records may be set only in World or Continental Championships:

i) speed records in class F2A (Classification - sub-class 134);

ii) race time records in class F2C (Classification - sub-classes 136 & 137).

d) In classes F3D and F5D, records may be set only in World or Continental Championships.

e) For the purposes of competition records, the National Airsports Control of the claimant is responsible for lodging the record claim.

**1.1.5 Claimants**

Claimants shall refer to the FAI Sporting Code General Section Chapter 7, as well as the whole of this Part One – CIAM Records Volume.

**1.2. GENERAL SPECIFICATIONS OF MODEL AIRCRAFT AND AEROSTATS FOR RECORD ATTEMPTS:****1.2.1. Weight**

a) For records mentioned under 1.1.4, item a - i), the total weight of the model aircraft or aerostat in flying order, with fuel when carried, shall not exceed 5.00 kg. The maximum total weight in flying order with fuel of a helicopter shall not exceed 6.00 kg. For records in regular competition under 1.1.4. item a - iii), the model aircraft must comply with the specifications required for the class concerned.

b) No refuelling shall be permitted after the model aircraft or aerostat is airborne during any record attempt.

**1.2.2. Motive Power**

a) The total swept volume of the piston(s) of the motor(s) shall not exceed 10 cm<sup>3</sup>. Pulse-jet reaction motor(s) are not permitted except for circular flight (record No. 135).

b) The maximum no load voltage for electric motors shall be 72 volts, except for competition records.

c) Power sources for electro model aircraft:

d) There will be three different possibilities of power sources:

F5 - "S" With rechargeable sources of current only (secondary elements).

F5 - "SOL" Solar cells only permitted.

F5 - "COMB" All sources of current are allowed. All kinds of combinations are expressly allowed. There must be a minimum of two sources of current.

- e) No connection between the source of current aboard the record model aircraft or aerostat and the ground, or to another model aircraft or aerostat or flying object is allowed.
- f) There are no restrictions on the weight of extensible motors in model aircraft records except in the case of competition records.
- g) Metal bladed propellers are not permitted.

### 1.2.3. Surface Area

- a) Fixed wing aircraft
  - i) For fixed wing aircraft the maximum surface area shall be 150 dm<sup>2</sup>.
  - ii) See CIAM General Rules B.4.22

#### b) Rotary wing aircraft

The 2016 reference to ABR 1.4.15 is reproduced below:

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

Specifications:

- a) Area: Maximum swept area of the lifting rotor(s) counting only once any superimposed areas: 300 dm<sup>2</sup>, except for coaxial helicopters whose rotors are farther than one rotor radius apart, in which case the total area of both rotors is counted.
- b) Weight: Maximum 5 kg with fuel.
- c) Piston motor swept volume: Maximum 10 cm<sup>3</sup>.
- d) Rubber motor: No restrictions.

**Note:** *Metal bladed rotors are prohibited*

### 1.2.4. Surface Loading

- a) For free flight model aircraft, the loading on the surface area must be between 12 g/dm<sup>2</sup> and 50 g/dm<sup>2</sup>.
- b) For radio control model aircraft, the loading of the surface area must not exceed 75 g/dm<sup>2</sup>. For control line model aircraft, the loading of the surface area must not exceed 100 g/dm<sup>2</sup>. There are no area loading requirements or wing span restrictions for indoor model aircraft for record purposes.

### 1.2.5. Controlling the Model

For radio controlled model aircraft or gliders in F3 or F5 record attempts, the pilot must be in direct control of the model aircraft via a transmitter for the whole of the flight.

### 1.2.6. Sight of the Model

For radio controlled model aircraft or gliders in F3 or F5 record attempts and aerostats in F7 record attempts, the model aircraft must be in the pilot's sight for the whole of the flight other than for momentary periods.

### 1.2.7. Launching

- a) The model aircraft may be hand-launched or take off from the ground for record attempts in any category except seaplanes, the launcher standing on the ground. Aerotow is not permitted. Seaplanes must take off from a water surface. Model aerostats must take off from the ground.
- b) For free flight a glider is launched by means of a cable of maximum 100 m in length. For radio controlled flight a glider is launched by means of a cable of 300 m maximum length. Launching of a glider may be carried out with the help of various devices such as winches, single or multiple pulley trains, or by running etc. To facilitate observation and timing the cable must be equipped with a pennant having a minimum area of 2,5 dm<sup>2</sup>. All types of auxiliary stabilising devices are forbidden.
- c) A parachute may be substituted for the pennant provided it is not attached to the glider and remains packed and inactive until the release of the cable.
- d) The claimant, or a member of the team, must operate the launching device and must be standing on the ground, except for R/C gliders where an assistant may operate the device.
- e) All freedom of action and movement is permitted to allow the best use of the cable length.
- f) Auxiliary take-off devices, such as a cart or a dolly undercarriage are permitted for all model aircraft except seaplanes. No means of auxiliary power is permitted on such devices. The device may become airborne and subsequently ejected.

g) For seaplanes, the landing gear must remain attached to the model throughout the flight.

#### **1.2.8. Point of Landing**

The point where the model first touches the ground or water shall be considered the Point of Landing. It is not required that seaplanes land on water.

#### **1.2.9. Jettisoning or Loss of Parts:**

The voluntary or involuntary jettisoning of any part of the model aircraft or aerostat, except auxiliary take-off devices, during the flight, is forbidden.

#### **1.2.10. Assistant Pilots**

Following Rule 1.1.2, in case of a team effort, each member of the team may act as pilot during the attempt. Team records are not permitted in Aerostats (see 1.10.1.3)

*Note: In the event that it is desired that a distance or duration record shall be listed in a single name only, an assistant pilot may be utilised after two hours from the start of the flight, up to a maximum of 10% of the total flight time recorded.*

#### **1.2.11. Difference between Consecutive Records**

There is no minimum figure by which the old record should be exceeded.

#### **1.2.12. Officials and Observers**

The head official shall be delegated by the National Airsports Control of the country where the attempt is made and the attempt must be witnessed by a minimum of 2 additional observers who are approved by that National Airsports Control.

#### **1.2.13. Flying Site**

Duration and Distance in Closed Circuit records for powered model aircraft (any power source) shall be made without the benefit of slope lift, rotors, lee waves and similar forms of lift. The land within a sufficient distance from the course must be free from objects which during the attempt are generating such lift including but not limited to hills, tree lines, vehicles and hand held devices.

#### **1.2.14. Repeated Record Improvements on One-and-the-Same Day**

On any date that a record is broken by more than one claimant, or repeatedly by the same claimant and model aircraft or aerostat, the best performance only will be awarded the new record.

#### **1.2.15. Safety**

All safety precautions and instructions of paragraph CIAM General Rules C.18 are applicable to record attempts

#### **1.2.16. Competition Timing**

In situations where records are claimed for flights made during the course of Championship competition, it may not be possible for the claimant to determine the specific stopwatches or timing device employed for recording the flight, or the claimant may not have access to the device for calibration purposes. In such cases, the Jury shall, to the best of its ability, attest to the accuracy of the devices.

### **1.3. SPECIAL RULES FOR DURATION RECORDS**

#### **1.3.1. Recording the Time**

- a) For all powered sub-classes the flying time starts at the moment when the model aircraft is released.
- b) For model aircraft rising off the ground or water, the model aircraft must become airborne in a period that does not exceed 2% of the total flight time.
- c) For all gliders, the timing starts when the glider is released from its launching device, or after hand launching.
- d) For radio controlled model aircraft with piston engines or electric motors, the engine must be turning the propeller (fully unfolded if a folding propeller is fitted) for at least 98 % of the time claimed as a record.

#### **1.3.2. End of Flight**

- a) The flight ends when the model aircraft or aerostat touches the ground or water or encounters an obstacle which definitely terminates its flight, or when it definitely disappears from the sight of the timekeepers, or from the sight of any devices being used by the timekeepers to track the model. The use of optical devices, electronic devices and other means of proving the model remained airborne is permitted if approved by the National Airsports Control.
- b) For radio controlled models, excluding hot air balloons, the point of landing must be within a distance of 500 metres of the point at which the model was released from the ground during the launch.

- c) In the case of a simultaneous record attempt for distance in a straight line and duration, the landing must be within 500 metres of the indicated landing point for the distance record.

### **1.3.3. Timekeeping**

- a) In the event the time is taken by using electronic stopwatches, two timekeepers must be used. The times registered must be recorded at the scene of the record, and must be signed by the officiating timekeepers. Only these times will be officially recognised. To follow the model in flight, the timekeepers are permitted to move by any means of locomotion available to them
- b) Recording barographs or electronic means of recording time other than stopwatches may be used if they have received prior approval by the organising National Airports Control. In such cases the time which is established is that recorded by the barograph or electronic device. The loss of altitude between the starting and landing points must not exceed 2 metres for each minute of flying time.

### **1.3.4. Accuracy of Measurement**

- a) In the case of the use of stopwatches, a synchronous electric clock may be used as a standard of calibration. When other electronic forms of measurement are used, commercial or governmental means may be employed for certification.
- b) Fractions of a second will not be retained in a time registered for a record flight.

### **1.3.5. Competition Records in Free Flight**

- a) Competition records are recognised for free flight models in competitions which have been registered on the FAI Sporting Calendar. All types of international contests are eligible: Open International, Limited International, Continental Championships, World Championships.
- b) In competition, records are recognised for the following duration in classes F1D and F1L:
  - i) the longest duration single flight;
  - ii) the longest total of the two best flights (as used for F1D and F1L classification).
- c) The claim must be supported by data from the competition. The supporting documentation must include copies of the flight cards recorded at the competition and signed by the timekeepers of the flights. The Contest Director must certify that these records are authentic and certify that the model aircraft used in the record were processed in accordance with the Sporting Code.
- d) For indoor competition records, there is no subdivision according to ceiling categories.

## **1.4. SPECIAL RULES FOR DISTANCE RECORDS IN A STRAIGHT LINE**

### **1.4.1. There are two possibilities of setting a distance record in a straight line:**

- a) Distance from A to B;  
and
- b) Goal and Return, that is, from A to B and back to A.

### **1.4.2. Measurement of Distance**

- a) The distance of the record shall be that measured in a straight line between the point of departure and landing, whatever may have been the actual path of the model aircraft or aerostat.
- b) In the case of Goal and Return record, the record distance is the distance from the starting point to turning point plus that from turning point to the landing point.
- c) Distances up to 50 kilometres may be measured on an official map of a scale at least 1:100.000.
- d) Distances up to 500 km may be measured on an official map at least 1:200.000 in Gauss/Krieger system.
- e) Distances greater than 500 km shall be calculated from the earth model WGS84 ellipsoid. The exact position of the take-off point, landing point and turning point may be determined by GPS. For further details, refer to the FAI Sporting Code General Section Chapter 8.
- f) The dossier claiming the record must contain a detailed calculation, made by a recognised scientific body, of the distance, with reference to the geographical ordinates of the place of departure and arrival.
- g) The degree of accuracy of the measurement must be stated in the dossier.
- h) The distance shall be calculated to an accuracy of at least 1% for distances up to 500 km and 0.5% for distances in excess of 500 km.

### **1.4.3. Point of Departure:**

- a) For powered model aircraft the point of departure is the place where the model was released. For aerostats it is the point when the model leaves the ground. For models rising off the ground or water, the distance covered in take-off cannot exceed 2,0% of the total record claimed.

- b) For gliders, the point of departure is the place where the claimant is at the time when the glider is released from the launching device.

**1.4.4. Point of Landing as Defined in 1.2.8.**

For radio controlled model aircraft and airships the pilot must indicate in writing before the flight the place where his model aircraft or airship will land. The actual point of landing must be within a radius of 500 m of the point indicated.

- 1.4.5.** For radio controlled model aircraft and aerostats, the pilot, with his transmitter, may follow the model aircraft or aerostat by any means of transport, the official observers accompanying him.

**1.4.6. Turning Point**

In the case of Goal and Return distance records, the turning point must be as specified for the landing point in Rule 1.4.4. and the official observers must certify that the turning point has been properly rounded.

**1.5. SPECIAL RULES FOR SPEED RECORDS IN A STRAIGHT LINE**

**1.5.1. Base**

- a) For model aircraft of the Free Flight sub-classes, the record is measured over a base of 50 m for model aircraft with elastic type motors and of 100 m for model aircraft with piston type motors.
- b) The course must be flown in both directions within 30 minutes.
- c) For radio controlled model aircraft the base must be 200 m, and it must be traversed in both directions without any intermediate landing.
- d) The altitude of the model aircraft must remain below 35 m and above 5 m during the 100 m entry and 200 m course. These altitudes are measured from the point where the pilot is standing.
- e) The dossier of the record must include a certified measurement of the course and a statement of the methods used to determine altitude and speed.
- f) For radio control speed record attempts the model aircraft must be fitted with a throttle or any other device to stop the motor by radio control.

**1.5.2. Timing**

- a) The timing of speed records must be accomplished by timing instruments approved by the organising National Airsports Control. If electronic stopwatches are used, timekeeping must be effected by two timekeepers, utilising devices which register to at least 1/100 of a second. The difference between the times registered by the two timekeepers must not exceed 0.05 second. Automatic and other electronic timing devices which register a single time are allowed, provided the system is properly documented in the dossier and approved by the NAC of the claimant(s).
- b) For speeds above 300km/h, manual activation of timing devices is not permitted. Only automatic means of timing which eliminate human error factors are permitted and must be certified accurate within 1/100 of a second.
- c) The data that the Directing Official signs (refer to 1.12) must be the data generated automatically at the time of the flight. Note that hand-written data is not acceptable.
- d) The mean of the two speeds of the two runs over the timing base gives the record speed.

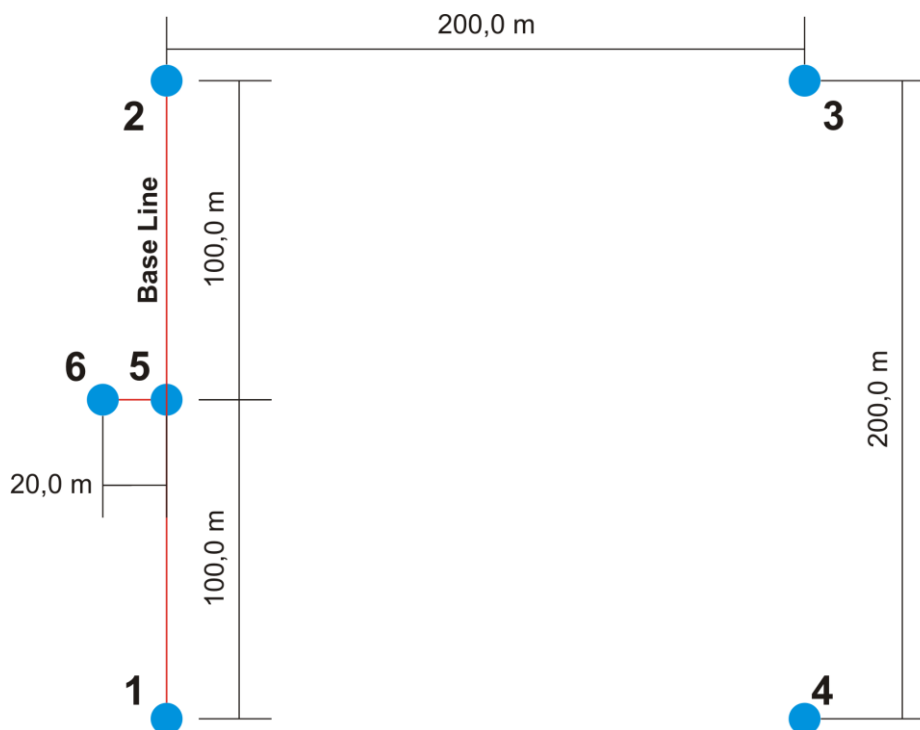
**1.6. SPECIAL RULES FOR SPEED RECORDS IN A CLOSED CIRCUIT**

**1.6.1. Base**

- a) The course consists of a square, defined by four prominently coloured pylons set 200 m apart on a 90° angle to each other, situated on flat land, or land with a maximum fall not to exceed 1 metre in 200 m within 1 km of the course. Each pylon shall be consecutively numbered one through four. Using a line between Pylon One and Pylon Two as a base line, set Pylon Five (or a wire sighting device) midway between them (i.e. 100 m from each pole). At an angle of 90 degrees to the Base Line set Pylon Six 20 m distant from the Base Line. Place a 10 mm wide reflective (contrasting) strip of tape between Pylon Five and Six as the Start/Finish line.

*Note: It is essential for accurate speed measurement that all pylons be absolutely vertical in order to prevent course length differences with altitude.*

- b) R/C gliders must be free of the launching cable (specified in 1.2.7.) prior to crossing the Start/Finish line.
- c) Models which land prior to completion of all four legs of the course, or intrude into the forbidden airspace (except after timing is completed) are disqualified and the flight voided. There is no altitude restriction or prohibition against circling in thermals outside the course.

**Diagram of the Course Layout****1.6.2. Timing**

- The timing of speed records must be effected by timing instruments approved by the National Airports Control.
- Timing begins when the model aircraft or airship crosses the Start/Finish line and ends when the model completes the course and again crosses the Start/Finish line still airborne within 30 minutes from launch.
- Timekeeping must be effected by two timekeepers equipped with timepieces timing to at least 1/100 of a second. The difference between the times registered by the two timekeepers must not exceed 12/100 of a second.
- Four judges will be situated immediately under each pylon and will raise a red flag when the model aircraft or airship infringes the space bounded by the poles.
- The pilot, his helper, timekeepers and the timing equipment must be located and remain during the record attempts inside the course at Pylon Five. Each pylon judge, also inside the course, will signal with a light when the nose of the model aircraft has passed the sighting device.
- Each pilot may have one (1) helper who may launch or release the model aircraft or aerostat for take-off and keep the pilot informed of the position of his model during the record attempt.

**1.6.3. RC Pylon Race Time Record (10 laps):**

Time records in pylon racing can be set over a ten lap course provided the record performance is achieved during a race under normal contest conditions in a World or Continental Championship. The record figure will be the time recorded for completing the appropriate course.

**1.7. SPECIAL RULES FOR SPEED RECORDS IN CIRCULAR FLIGHT****1.7.1.** The speed will be timed over a minimum distance of one kilometre.

Minimum flight circles must be:

Sub-class 130: Swept volume of motor 0 to 1,0 cm<sup>3</sup> inclusive. .... R = 13,27 m (12 laps = 1 km)

Sub-class 131: Swept volume of motor 1,01 to 2,5 cm<sup>3</sup> inclusive..... R = 15,92 m (10 laps = 1 km)

Sub-class 132: Swept volume of motor 2,51 to 5 cm<sup>3</sup> inclusive..... R = 15,92 m (10 laps = 1 km)

Sub-class 133: Swept volume of motor 5,01 to 10 cm<sup>3</sup> inclusive..... R = 19,90 m ( 8 laps = 1 km)

Sub-class 134: Swept volume of motor 1,01 to 2,5 cm<sup>3</sup> inclusive..... R = 17,69 m ( 9 laps = 1 km)

Sub-class 135: Jet reaction motors. .... R = 19,90 m (8 laps = 1 km)

*Note: Longer lines may be used providing that the distance of one kilometre is made up by a whole number of laps except for competition class 134.*



**1.7.2. Control Line(s)**

For record attempts there shall be no limit to the diameter of the control line(s) or restrictions on the construction of the control line(s). This does not apply to competition classes F2 (sub-class 134) or F2C (sub-class 136 and 137).

**1.7.3. Fuel**

There shall be no restriction to the composition of the fuel except in competition class 134.

**1.7.4. Timekeeping**

- a) The timing must be carried out by two timekeepers using stop watches or an electronic timing apparatus registering to at least 1/100th of a second.
- b) The difference between the two recorded times must not exceed 12/100th of a second.
- c) The timing commences officially when the competitor has placed his handle in the pylon fork and the model, having made 2 complete circuits again passes the height marker on the edge of the circuit directly opposite the timekeepers.
- d) The handle and pylon must conform to the specifications for control line speed contests except that in the case of single line control the competitor may use any handle with a single flexible point of attachment on the control handle and a horizontal bar (handle pivot) as for two line handles, with a 6 mm maximum distance between the flexible point of attachment and the point of contact on the horizontal bar on the pylon fork.
- e) Also for single line control systems, no rigid reinforcement of the line in front of the handle shall be permitted and any torsional, geared or other control mechanism must be positioned behind the pylon fork.
- f) During the whole of the timed portion of the flight, the horizontal bar must rest in the pivoted fork.
- g) All physical effort for the purpose of increasing the speed of the model during a record attempt is forbidden and will entail immediate cancellation.

**1.7.5. Height of Flight**

The normal flying height must be between 1 and 3 metres.

**1.7.6. Accuracy of Measurement**

- a) The speed recorded will be in kilometres per hour rounded to the nearest lower 1/10th of a kilometre.
- b) Team Race, (Race Time) records over 100 laps (sub-class 136) and 200 Laps (sub-class 137) (10 and 20 km):  
Race time records in team race can be set over a 10 km (100 laps) course (normal race or semi-final) or a 20 km (200 laps) course (final) provided the record performance is achieved during a race under normal contest conditions in a World Championship or Continental Championship. The record figure will be the time recorded for completing the appropriate course.

**1.8. SPECIAL RULES FOR ALTITUDE RECORDS****1.8.1. Verification of Measurements**

- a) In order to establish the height above the starting point it is required:
  - i) either to use small barographs made especially for model aircraft or aerostats and carried on board; the barographs having previously been approved by the National Airports Control.
  - ii) or by means of an electronic device carried on board the model aircraft or aerostat and designed to register altitude and record the readings either in graph or digital format. Any such electronic device must be calibrated prior to the attempt and the calibration certificate included in the record claim dossier.
  - iii) The measuring device must be zeroed at the point of launch. If the device does not have such a facility, then the start (launch) point altitude must be established and recorded. A statement clearly indicating the altitude of the start (launch) point, and the altitude attained, is required. This must be signed by the pilot and substantiated by the official observer(s) and must be included in the dossier.
  - iv) Or, to ensure control by qualified observers using theodolites or telemeters, provided these instruments have been previously approved by the National Airports Control.
  - v) Or, by means of a barograph carried in an aircraft which follows the model but never exceeds the maximum altitude of the model. An official observer must be present in the aircraft during the flight, and the barograph record must be counter signed by the official observer and the pilot of the aircraft.

*cont/...*

b) If theodolites or telemeters are used, the National Airports Control:

- i) Must give a description of the instruments and the methods employed in using them, a signed statement certifying the degree of accuracy reached and a check report on the instruments and the method used.
- ii) In the case of a barograph, the calibration must be performed against an absolute pressure gauge and the International Civil Aeronautics Organisation Pressure vs. Altitude Tables may then be used to compute altitude.

### **1.8.2. Point of Landing**

For radio controlled models, excluding hot air balloons, the landing must occur within a radius of 500 metres of the point of departure as described in 1.3.2. In the case of simultaneous attempts for distance and altitude, the landing must be made as described in 1.4.4.

## **1.9. SPECIAL RULES FOR DISTANCE IN CLOSED CIRCUIT RECORDS**

**1.9.1.** For radio controlled models, the length of the circuit must be over a straight base of 500 m for piston/electro type motor models, and over a base of 100 m for gliders.

**1.9.2.** Fractions of a circuit will not be included in the record claimed.

## **1.10. SPECIAL RULES FOR AEROSTATS**

### **1.10.1 General**

#### **1.10.1.1 Surface area**

The volume of the envelope must be recorded.

#### **1.10.1.2 Point of landing**

For hot air balloons, the point of landing is not required to be defined before the flight.

#### **1.10.1.3 Assistant pilot**

Assistant pilots are not permitted for aerostat records.

#### **1.10.1.4 Flying site**

For outside attempts with aerostats, the flying site is open land.

### **1.10.2 Hot Air Balloons Duration Records**

#### **1.10.2.1 Recording the time**

The flight time starts when the lower part of the balloon leaves the ground. At take-off, rebounds are not allowed.

#### **1.10.2.2 End of flight**

The flight time ends when any part of the balloon touches the ground or any obstacle.

#### **1.10.2.3 Timekeeping**

Refer to rule 1.3.3.

### **1.10.3 Aerostats Distance Records in a Straight Line**

#### **1.10.3.1 Point of departure**

The point of departure is the point at which the model leaves the ground. At take-off, rebounds are not allowed.

#### **1.10.3.2 Point of landing**

For hot air balloons, the point of landing is not required to be defined before the flight.

### **1.10.4 Airships Speed Records in a Straight Line**

#### **1.10.4.1 Base**

For airships, the base must be 200 m for outside records and 50 m for indoor records and must be run in both directions without any intermediate landing.

### **1.10.5 Airships Speed Records in a Closed Circuit**

#### **1.10.5.1 Base**

For Airships, the base for outside records is a rectangle of 100 x 50 m. For indoor records, the base is a rectangle of 50 x 25 m. The corners are defined by vertical pylons. The flight area must be flat or with a maximum fall not to exceed 1 metre in 200m. The course consists of a rectangle, defined by four prominently coloured pylons set on each corner. Each pylon shall be consecutively numbered one through four. The base line is the side Pylon One to Pylon Two (longest side of the rectangle).

*cont/...*

At the middle of the side One-Two, set Pylon Five (or a wire sighting device). At an angle of 90 degrees to the Base Line set Pylon Six 20 m (outdoor) or 5 m (Indoor) distant from the Base Line. The line between Pylon Five and Pylon Six is the start/Finish line. The base is to be run five times.

For Outdoor records, the rectangle is 100 x 40 m. For Indoor records, the rectangle is 25 x 10 m.

### **1.10.6 Airships distance in Closed Circuit Records**

#### 1.10.6.1 Base

Refer to rule 1.10.5.1

### **1.10.7 Hot Air Balloons Stationary Flight Duration**

#### 1.10.7.1 Flight Level

The hot air balloon must have a stabilised flight between the ground and a limited altitude. The maximum height of the flight is defined by using a rope fixed to the bottom of the basket. The length of the rope below the basket is 25 cm for indoor records and 1 m for outdoor records. The free end of the rope must have a small weight attached to maintain contact with the ground for as long as possible.

#### 1.10.7.2 Flight Time

The flight time starts when the balloon leaves the ground.

The flight time ceases when:

- i) the basket makes contact with the ground;
- ii) or the rope loses contact with the ground;
- iii) or any part of the balloon makes contact with any obstacle (building, wall, tree, line).

#### 1.10.7.3 Timekeeping

Refer to rule 1.3.3.

## **1.11 DOSSIER OF A RECORD ATTEMPT**

It is the purpose of homologation procedures and requirements to ascertain as well as possible, that a given model aircraft indeed attains the flight performance claimed and that the flight was made within the requirements and standards of this Sporting Code. The many factors involved in the flight require that adequate data be submitted to confirm a record attempt. In unusual circumstances, FAI may request additional substantiating data to insure that these purposes have been achieved.

### **1.11.1.** A dossier must be submitted to the FAI within 120 days of the Record Attempt. It shall include:

- a) A completed official form as shown on Application for Record Confirmation form (which is downloadable from "Documents" section of the CIAM website <http://www.fai.org/ciam-documents>).
- b) A three view drawing of the model aircraft showing all basic dimensions and stating the scale of the drawing. Certification countersignature of the National Airsports Control official is required.
- c) A photograph of the model aircraft. Certification countersignature by a National Airsports Control official is required.
- d) A statement of supporting data as listed in 1.12 below.
- e) A properly filled form "Checklist record dossier - Model aircraft" (which is downloadable from "Documents" section of the CIAM website <http://www.fai.org/ciam-documents>).

### **1.11.2.** Photocopies of record dossiers are available, upon written request of a National Airsports Control, at a fee of 40 Euro for dossiers up to 10 pages and 5 Euro for each additional page.

## **1.12. SUPPORTING DATA**

- a) Whenever numerical limits are established for special categories, such as 1.3.2. for point of landing, duration of motor run, or as 1.4.3. for take-off run a measurement of these specific quantities should be stated in the supporting data section.
- b) If barographs, special electronic devices, timing equipment, etc., are employed, a description adequate to ascertain the accuracy and validity of the devices must be included.
- c) A statement must be made that all requirements for the specific categories were met.
- d) Latitude and longitude of take-off and landing points, as well as mathematical calculations must be shown for records involving great circle distances.
- e) A listing of all officials and participating observers shall be included. The supporting data sheet shall be signed by the directing official.
- f) For historical purposes, a brief description of the flight is desired. Pertinent factors, such as weather, special equipment in the models or on the ground, or any unusual circumstances occurring during the flight will be of value. This section is not officially required but officials are encouraged to submit it on a separate sheet of paper for future reference.

- g) For Duration and Distance in Closed Circuit records for powered model aircraft (any power source), a statement must be made which shows beyond reasonable doubt that the requirements of paragraph 1.2.13 Flying Site, have been met. Documentation such as photographs, maps, and weather observations may be part of such statement.
- h) TIME-KEEPING 1.3.3 (Duration) 1.5.2. and 1.6.2 (Speed) plus Aerostats (1.10).
  - i) Describe in brief, the method of timekeeping employed.
  - ii) No. of watches
  - iii) Position of timekeepers
  - iv) Electronic equipment used
- i) BASE 1.4.1. (Distance) 1.5.1 & 1.9.1, (Speed Closed Circuit) 1.6.1. plus Aerostats (1.10).
  - i) Describe in brief, the method of establishing the base measurement.
  - ii) Measuring equipment
  - iii) Method of marking base limits
  - iv) Number of observers at base limits
  - v) Method of signalling, base to pilot
  - vi) Supply a sketch of the course, defining base, turning points, marker poles, altitudes of base limits and position of officials relative to course.

ALL REQUIREMENTS OF ARTICLES 1.4.2, 1.8.1, 1.12 MUST BE OBSERVED AND RECORDED IN THE DOSSIER.

**PART TWO – RECORDS FOR SPACE MODELS****2.0 CLASSIFICATION OF RECORDS**

The FAI recognises World class records in the category of space models listed in the following table.

**SPACE MODELS “S” CLASSIFICATION OF RECORDS**

Space Model Category	Record No.	Class	Total Impulse N sec	Maximum Weight	Number of Payloads
S-1 Altitude	240	S1A	0,00 - 2,50	60	
	141	S1B	2,51 - 5,00	90	
	102	S1C	5,01 - 10,00	120	
	142	S1D	10,01 - 20,00	240	
	143	S1E	20,01 - 40,00	300	
	104	S1F	40,01 - 80,00	500	
S-2 Payload Altitude	105	S2C	5,01 - 10,00	90	1
	106	S2E	20,01 - 40,00	180	2
	107	S2F	40,01 - 80,00	500	4
S-3 Parachute Duration	208	S3A	0,00 - 2,50	100	
	109	S3B	2,51 - 5,00	100	
	110	S3C	5,01 - 10,00	200	
	111	S3D	10,01 - 20,00	500	
S-4 Boost Glider Duration	012	S4A	0,00 - 2,50	30	
	013	S4B	2,51 - 5,00	60	
	014	S4C	5,01 - 10,00	120	
	044	S4D	10,01 - 20,00	240	
	045	S4E	20,01 - 40,00	300	
	016	S4F	40,01 - 80,00	500	
S-5 Scale Altitude	217	S5A	0,00 - 2,50	90	
	018	S5B	2,51 - 5,00	120	
	119	S5C	5,01 - 0,00	150	
	146	S5D	10,01 - 20,00	180	
	147	S5E	20,01 - 40,00	240	
	121	S5F	40,01 - 80,00	500	
S-6 Streamer Duration	222	S6A	0,00 - 2,50	100	
	123	S6B	2,51 - 5,00	100	
	124	S6C	5,01 - 10,00	200	
	125	S6D	10,01 - 20,00	500	
S-8 Rocket Glider Duration	026	S8A	0,00 - 2,50	60	
	027	S8B	2,51 - 5,00	90	
	028	S8C	5,01 - 10,00	120	
	029	S8D	10,01 - 20,00	240	
	030	S8E	20,01 - 40,00	300	
	031	S8F	40,01 - 80,00	500	
S-9 Gyrocopter Duration	232	S9A	0,00 - 2,50	60	
	133	S9B	2,51 - 5,00	90	
	134	S9C	5,01 - 10,00	150	
	135	S9D	10,01 - 20,00	200	
S-10 Flex-wing Duration	236	S10A	0,00 - 2,50	60	
	137	S10B	2,51 - 5,00	90	
	138	S10C	5,01 - 10,00	120	
	139	S10D	10,01 - 20,00	240	

*Note: Three figures record numbering was introduced to designate version of rules revision. First figure "0" shows the rules stayed unchanged with respect to the FAI Sporting Code Section 4d - edition 1997. The first figure "1" shows the new rules became effective Jan 1, 2001, and established record was retired. The first figure "2" corresponds to the rules effective Jan 1, 2005 and established record was retired."*

## **2.1. WORLD CLASS RECORDS FOR SPACE MODELS**

All FAI space model performance records must be established in or at FAI first or second category sporting events listed in the FAI Sporting Calendar and organised by the National Airsports Control or its affiliate in accordance with the Sporting Code Volume S Space Models if the weather conditions and schedule of the event permits.

Established records, for any class of model for which new rules or rule changes apply, such that the performance of that class of models is affected in any way, shall be retired whenever those new rules or rule changes become effective.

## **2.2. SURPASSING PREVIOUS RECORD**

Attempts to surpass an established record must exceed by one percent (1%) the value of the established record performance.

All models used for establishing or surmounting of the existing record must correspond to all regulations in the Sporting Code Volume S Space Models.

## **2.3. HOMOLOGATION REQUIREMENTS**

In addition to the standard FAI homologation data, the following special space model record homologation requirements must be met by any record claimant.

**2.3.1.** The competition flight card of the submitted record attempt shall be marked, "Record Attempt." Tracking station angular data must be entered in ink. The name, signature, license number and address of the record claimant must appear, written in ink, on the contest card. The following data, entered in ink, must also appear on the contest flight card: competition sanction number, event in which the record attempt was flown, date of record attempt, location of record attempt, certifying signatures of three witnessing judges, a signed statement certifying the calibration and accuracy of the tracking system used, and a statement signed by the three judges giving the make, type and manufacturer of the engines used in the attempt.

**2.3.2.** In the case of parachute/streamer duration record attempts, the three witnessing judges must submit a signed statement giving size, material and design of the parachute used.

## **2.4. HOMOLOGATION DATA**

The record claimant must submit the following homologation data:

- a). An accurate drawing to scale of the model used in the record attempt, said drawing to include all principal dimensions, gross weight, and burnout weight.
- b). A clear, glossy photograph enlargement of the model used in the record attempt with a ruler, hand, or other object of known size appearing in the photograph indication size of the model.
- c). The record dossier should contain completely filled out forms as applicable to the Space Model class concerned, which are downloadable from "Documents" section of the CIAM website <http://www.fai.org/ciam-documents>.

## **2.5. JUSTIFICATION**

It is the purpose of homologation procedures and requirements to ascertain as well as possible that a given model did indeed attain the flight performance claimed and that the flight was made within the requirements and standards of the Sporting Code Volume S Space Models. The many factors involved in the flight of a space model require that the above additional data (refer 2.4.) be submitted to confirm a record attempt. In unusual circumstances, the FAI may request additional substantiating data to insure that these purposes have been achieved.