FAI Sporting Code

Fédération Aéronautique Internationale

Section 4 – Aeromodelling

Records

2020 Edition

Effective 1st January 2020

MODEL AIRCRAFT AND AEROSTAT RECORDS – CLASS F
SPACE MODEL RECORDS – CLASS S

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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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So that the following section begins on a front sided-page if printed back-to-back

THIS REVISED 2020 VOLUME INCLUDES THE FOLLOWING AMENDMENTS FROM 2019:

Paragraph	Plenary meeting approving change	Brief description of change	Change incorporated by
1.1 Table 2 Class S Records	n/a	FAI Database was amended to bring category headings for Space records in line with F records.	Kevin Dodd Technical Secretary

Paragraph	Plenary meeting approving change	Brief description of change	Change incorporated by
5.1.1.4 - 5.1.1.5	2018	**Early Implementation from 01/06/18** Corrected a technical detail in the timing of records	Kevin Dodd Technical Secretary

Paragraph	Plenary meeting approving change	Brief description of change	Change incorporated by
Early implementation from 01/06/2017 approved at 2017 CIAM Plenary Meeting			Kevin Dodd Technical Secretary
Tables 1 & 2	2017	Prefixes F and S introduced to avoid confusion.	
1.3.		Builder of the model rule retained for all records (except for competition and competition specific aircraft records)	
1.6.		Preliminary claim time frame specified – within 7 days	
2.1.2.		Total weight including fuel shall not exceed 5.00 kg for **all records**.	
2.1.3.		General voltage limit of 42.56 V applied to all electric powered model aircraft for record purposes.	
2.1.5.		All auxiliary stabilizing devices forbidden, except for helicopters. Use of automatic position locking devices and all kind of autonomous control forbidden.	
3.5.		Minimum difference between records defined.	
3.6.		The best performance on one-and-the-same-day will be awarded the record.	
5.3.1.		Base for airship indoor records changed to 25 m.	
5.3.4.		Safety distance added for speed records	
5.4. & 5.5.		Changed course definition for speed and distance in a closed circuit. Note: a 2 pylon course is mandated for safety.	

Paragraph	Plenary meeting approving change	Brief description of change	Change incorporated by
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. References to Volume ABR have been amended to the applicable reference in Volume CIAM General Rules. These changes have been marked with double lines. 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.			
There were no amendments to Section 4C, Part 2 Records or Space Records at Plenary 2016.			

Table of Contents

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

PART ONE – GENERAL REGULATIONS

1.1 Classification of Records

The FAI recognises World class records in the subclasses, categories and groups of model aircraft, aerostats and space models listed in the following Tables 1 and 2.

TABLE 1 – CLASS F (RECORDS FOR MODEL AIRCRAFT AND AEROSTATS)

PAGE 1 OF 2

SUB CLASS		CATEGORY (Type of model aircraft)	GROUP (Method of propulsion)	TYPE			
				Duration	Distance in a straight line	Gain in altitude	Speed
F1 FREE FLIGHT	Open	Glider	n/a	F101	F102	F103	n/a
		Aeroplane	Extensible Motor	F104	F105	F106	F107
			Piston Motor	F108	F109	F110	F111
				DURATION			
				Ceiling Cat I <8M (a)	Ceiling Cat II 8-<15M (b)	Ceiling Cat III 15-<30M (c)	Ceiling Cat IV >30M (d)
	Open	Indoor Aeroplane	Extensible Motor	F115 (a)	F115 (b)	F115 (c)	F115 (d)
	F1D			F125 (a)	F125 (b)	F125 (c)	F125 (d)
	F1L			F116 (a)	F116 (b)	F116 (c)	F116 (d)
	F1M			F117 (a)	F117 (b)	F117 (c)	F117 (d)
	F1N	Indoor Glider	n/a	F118 (a)	F118 (b)	F118 (c)	F118 (d)
				DURATION IN COMPETITION			
		Indoor Aeroplane	Extensible Motor	One Flight		Two Flights	
	F1D			F119		F120	
	F1L			F122		F123	
F2 CONTROL LINE CIRCULAR FLIGHT	Open	Aeroplane	Piston Motor	SPEED			
				SWEPT VOLUME cm^3			
				0,00 to 1,00	1,01 to 2,50	2,51 to 5,00	5,01 to 10,00
				F130	F131	F132	F133
	F2A				Speed in Competition		
					F134*		
	Open		Reaction Motor	F135			
				TEAM RACE (Race Time)			
	F2C		Piston Motor	100 laps - F136*		200 laps - F137*	

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

cont/…

1.1 Classification of Records

TABLE 1

PAGE 2 OF 2

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	F141	F142	F143	F144	F145	F146	F147
		Seaplane		F148	F149	F150	F151	F152	F153	F154
		Glider	n/a	F155	F156	F157	F158	F159	F160	F161
		Helicopter	Piston Motor	F162	F163	F164	F165	F166	F167	F168
	F3D	Aeroplane		In Competition – 10 laps						F83*
F5 RADIO CONTROL FLIGHT	Open	Aeroplane	Electric Motor S	F171	F172	F173	F174	F175	F176	F177
			Electric Motor SOL	F185	F186	F187	F188	F189	F190	F191
			Electric Motor COMB	F192	F193	F194	F195	F196	F197	F198
		Helicopter	Electric Motor	F199	F200	F201	F202	F203	F204	F205
	F5D	Aeroplane		In Competition – 10 laps						F90*

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

F7 RADIO CONTROL FLIGHT	Open	Airships		**Outdoor**						
					F206	F207	F208	F209	F210	F211
			Piston Motor					**Indoor**		
								F212	F213	F214
				Outdoor						
					F215	F216	F217	F218	F219	F220
			Electric Motor					**Indoor**		
								F221	F222	F223
		Hot Air Balloons	n/a	**Outdoor**						
				Duration		F224	Distance in a straight line			F225
				Gain in altitude		F226	Stationary Flight Duration			F227
				Indoor						
				Duration		F228	Stationary Flight Duration			F229

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

1.1 Classification of Records

TABLE 2 – CLASS S (RECORDS FOR SPACE MODELS)

PAGE 1 of 1

Space Model Subclass	Type (Record No.)	Category	Group Total Impulse (N sec)	Maximum Weight	Number of Payloads
S-1 Altitude	S240	S1A	0,00 - 2,50	60	
	S141	S1B	2,51 - 5,00	90	
	S102	S1C	5,01 - 10,00	120	
	S142	S1D	10,01 - 20,00	240	
	S143	S1E	20,01 - 40.00	300	
	S104	S1F	40,01 - 80,00	500	
S-2 Payload Altitude	S105	S2C	5,01 - 10,00	90	1
	S106	S2E	20,01 - 40,00	180	2
	S107	S2F	40,01 - 80,00	500	4
S-3 Parachute Duration	S208	S3A	0,00 - 2,50	100	
	S109	S3B	2,51 - 5,00	100	
	S110	S3C	5,01 - 10,00	200	
	S111	S3D	10,01 - 20,00	500	
S-4 Boost Glider Duration	S012	S4A	0,00 - 2,50	30	
	S013	S4B	2,51 - 5.00	60	
	S014	S4C	5,01 - 10,00	120	
	S044	S4D	10,01 - 20,00	240	
	S045	S4E	20,01 - 40,00	300	
	S016	S4F	40,01 - 80,00	500	
S-5 Scale Altitude	S217	S5A	0,00 - 2,50	90	
	S018	S5B	2,51 - 5,00	120	
	S119	S5C	5,01 - 0,00	150	
	S146	S5D	10,01 - 20,00	180	
	S147	S5E	20,01 - 40,00	240	
	S121	S5F	40,01 - 80,00	500	
S-6 Streamer Duration	S222	S6A	0,00 - 2,50	100	
	S123	S6B	2,51 - 5,00	100	
	S124	S6C	5,01 - 10,00	200	
	S125	S6D	10,01 - 20,00	500	
S-8 Rocket Glider Duration	S026	S8A	0,00 - 2,50	60	
	S027	S8B	2,51 - 5,00	90	
	S028	S8C	5,01 - 10,00	120	
	S029	S8D	10,01 - 20,00	240	
	S030	S8E	20,01 - 40,00	300	
	S031	S8F	40,01 - 80,00	500	
S-9 Gyrocopter Duration	S232	S9A	0,00 - 2,50	60	
	S133	S9B	2,51 - 5,00	90	
	S134	S9C	5,01 - 10,00	150	
	S135	S9D	10,01 - 20.00	200	
S-10 Flex-wing Duration	S236	S10A	0,00 - 2,50	60	
	S137	S10B	2,51 - 5,00	90	
	S138	S10C	5,01 - 10,00	120	
	S139	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."

1.2. Holder(s) of Records

1.2.1. 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.

1.2.2. In the case of a team effort, each member of the team may act as pilot during the attempt. Team records are not permitted for aerostats records.

1.2.3. 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. Assistant pilots are not permitted for aerostats records.

1.3. Builder of the Model Aircraft or Aerostat

In all record*s,* the claimant(s) must be the builder(s) of the model aircraft or aerostat flown in the attempt, except for competition records and records with competition specific aircraft, where the competition rules exempt that class from that rule. 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.

1.4. Categories of World Records

There are three categories of World Records:

i) Open Records: Records performed with model aircraft or aerostats under the specifications given in paragraph 2.

ii) Competition Specific Model Aircraft Records: Records performed with model aircraft built to competition specification but with flights not necessarily in a competition

iii) Competition Records: Records performed in regular competitions with model aircraft and competitions defined in Sporting Code CIAM General Rules (see paragraph 1.9.).

1.5. FAI Sporting Licence

Claimants must hold a valid FAI Sporting Licence which covers the period of the performance. A Sporting Licence shall only be considered issued and valid, if the holder is listed on the FAI Sporting Licence database by the NAC that is issuing the particular Sporting Licence.Claimants shall refer to the FAI Sporting Code General Section Chapters 7 and 8, as well as this Volume.

1.6. Preliminary Claim

A preliminary claim for a World Record must be submitted by the claimant's NAC to be received by FAI within 7 days of the completion of the record attempt. For a competition record the FAI Jury must notify FAI within 7 days of the record accomplishment.

1.7. Record Dossier

A record dossier must be submitted with a record claim.

Part 6. gives detailed information about the content of the record dossier, as do the accompanying forms.

1.8. Retired Records

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 when those new rules or rule changes become effective. This decision is to be made by the Plenary meeting, advised by the relevant Subcommittee Chairman, at the time of the rule change.

1.9. Competition Records

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

1.9.2. 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 officials of the flights. The Contest Director must certify that these records are authentic and certify that the model aircraft used in the record was processed in accordance with the Sporting Code.

1.9.3. 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.

PART TWO – GENERAL SPECIFICATIONS OF MODEL AIRCRAFT AND AEROSTATS

2.1. Open Records

2.1.1. General Definition and Characteristics

Model aircraft and aerostats used to set open category records must conform to the general definition of model aircraft (CIAM General Rules, paragraphs B 1.1 - B.1.3).

For Open Records the following specifications apply, unless otherwise stated in the class and record specific paragraphs.

2.1.2. Weight

a) The total weight of the model aircraft or aerostat in flying order, with fuel when carried, shall not exceed 5.00 kg.

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

2.1.3. Motive Power

a) The total swept volume of piston motor(s) shall not exceed 10 cm^3.

b) Electric power sources:

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

F5 - "S" Rechargeable sources of current only (secondary elements). The (zero current) voltage shall be maximum 42.56 volts (e.g. 10 Lipo-cells).

F5 - "SOL" Solar cells only.

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

In the case of rechargeable sources of current, the maximum (static) voltage shall be 42.56 volts (e.g. 10 Lipo-cells).

ii) 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.

c) Extensible motors: no restrictions on weight.

d) Pulse-jet reaction motor(s) are not permitted except for control line flight (record No. F135). Maximum outside diameter of pulse-jet combustion chamber: 80 mm.

e) Metal bladed propellers are not permitted.

2.1.4. Surface Area

Fixed wing aircraft: Maximum surface area shall be 150 dm^2 (see CIAM General Rules B.4.22).

2.1.5. Auxiliary Stabilizing Devices

All types of auxiliary stabilizing devices are forbidden, except for helicopters.

The use of automatic position (altitude, latitude and longitude) locking devices, with external references or not, is forbidden and all other kinds of autonomous control (like GPS steering) are forbidden.

2.1.6. Additional Characteristics for Helicopters

2.1.6.1. The swept area of the lifting rotor cannot exceed 250 dm^2. For helicopters with multiple rotors whose rotor shafts are more than one rotor diameter apart, the total swept area of both rotors cannot exceed 250 dm^2. For helicopters with multiple rotors whose rotor shafts are less than one rotor diameter apart, the swept area of both rotors (counting the area of superposition only once) cannot exceed 250 dm^2. The tail rotor must be driven by the main rotor and must not be driven by a separate engine/motor.

2.1.6.2. The use of auxiliary stabilizing devices (gyros) is allowed.

2.1.6.3. Metal bladed main or tail rotor blades are prohibited.

2.2. Records with Competition Specific Models and Competition Records

2.2.1. Model Specifications

For records with competition models and competition records (1.4. ii) and iii)), the model aircraft must comply with the current specifications required for the class concerned.

Space models for record attempts must comply with the definitions and characteristics in the CIAM General Rules, paragraph B.2., and all current regulations of the current edition of Volume Space Models.

2.2.2. Competition Records

Competition records have to be flown under competition rules as defined in the class specific volume for the current year.

PART THREE – GENERAL RULES FOR RECORD ATTEMPTS

3.1. 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.

For competition records these persons are the Contest Director and the FAI jury.

3.2. Launching

3.2.1. 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 (see Part Four – Class Specific Rules).

3.2.2. Aerotow is not permitted.

3.2.3 For competition records take off will be in accordance with the specific class rules

3.3. 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.

3.4. 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.

3.5. Minimum Difference between Consecutive Records

The minimum figure is related to the accuracy of measurement per type of record (FAI General Section: 8.3). In the relevant paragraphs of Chapter 6, specific rules for minimum differences between consecutive records are defined.

3.6. 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. In case two pilots/teams have exactly the same performance on that date, the performance may be registered as a record in the joint names of the pilots/teams.

3.7. Safety Rules

While paragraph C18 of the CIAM General Rules is intended primarily for FAI competition flying, much of it can be applied for record attempts.

The responsible NAC will take care of the safety precautions specific for each record attempt based on local conditions.

For competition records the safety rules for that specific class apply.

Safety measures for specific records are included in the relevant paragraphs of FAI General Section Chapter 6.

PART FOUR – CLASS SPECIFIC RULES

4.1. Free Flight

4.1.1. Open Records (Records 101 – 125)

a) The loading on the surface area must be between 12 g/dm^2 and 50 g/dm^2. No area loading requirements for free flight indoor model aircraft.

b) A glider is launched by means of a cable of maximum 100 m in 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^2.

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.

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. No means of auxiliary power is permitted on such devices. The device may become airborne and subsequently be ejected.

4.1.2. Records with Models to Competition Specification (Indoor classes, F1D, F1L, F1M, F1N).

Records 116-118, 125

Records performed with model aircraft built to competition specification but with flights not necessarily in a competition (Specific Model Aircraft).

a) These records may belong only to one person, not a team.

b) These records can be set in classes F1D (125 a-d), F1L (116 a-d), F1M (117 a-d) and F1N (118 a-d)

4.1.3. Competition Records (Indoor classes F1D and F1L)

a) Competition records are recognised for free flight models in competitions which have been registered on the FAI Sporting Calendar. These records can only be set in FAI sanctioned first and second category events.

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) The following duration records in classes F1D and F1L are recognised:

i) the longest duration single flight (records 119 and 122);

ii) the longest total of the two best flights (as used for F1D and F1L classification), records 120 and 123.

d) For indoor competition records, there is no subdivision according to ceiling categories.

4.2. Control Line

4.2.1. Open Records

4.2.1.1. Model Characteristics

The loading of the surface area must not exceed 100 g/dm^2.

4.2.1.2. Measurement of Speed

The speed will be determined by measuring the time over a minimum distance of one kilometre.

Minimum radius of flight circles must be:

Sub-class 130: Swept volume of motor 0 to 1,0 cm^3 inclusive. ..... R = 13.27 m (12 laps = 1 km)

Sub-class 131: Swept volume of motor 1,01 to 2,5 cm^3 inclusive. ..... R = 15.92 m (10 laps = 1 km)

Sub-class 132: Swept volume of motor 2,51 to 5 cm^3 inclusive. ..... R = 15.92 m (10 laps = 1 km)

Sub-class 133: Swept volume of motor 5,01 to 10 cm^3 inclusive. ..... R = 19.90 m (8 laps = 1 km)

Sub-class 134: Swept volume of motor 1,01 to 2,5 cm^3 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.

cont/…

4.2.1.3. 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).

4.2.1.4. Fuel

There shall be no restriction to the composition of the fuel.

4.2.1.5. Timekeeping

a) The timing must be carried out by calibrated electronic timing apparatus with an accuracy of 0.001 second.

b) The data that the Directing Official signs must be the data generated automatically at the time of the flight. Hand-written data is not acceptable. These data must be included in the record attempt dossier (see paragraph 7.3.)

c) The electronic system must start and stop the timing with an accuracy of the model's horizontal position of +/- 0.2 metres.

d) 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 electronic sensor.

e) 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.

f) 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.

g) During the whole of the timed portion of the flight, the horizontal bar must rest in the pivoted fork.

h) All physical effort for the purpose of increasing the speed of the model during a record attempt is forbidden and will entail immediate cancellation.

4.2.1.6. Height of Flight

The flying height must be between 1 and 3 metres during the timed portion of the flight.

4.2.1.7. Accuracy of Measurement

The speed recorded will be in kilometres per hour rounded to the nearest lower $1/10^{th}$.

4.1.2.8. Minimum Difference between Consecutive Records

The minimum difference between two consecutive records shall be 0.1 km/h.

4.2.2. Competition Records

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

4.2.2.1. Speed Competition Records

a) Speed records can be set in competition class F2A (sub-class 134 in Table I)

b) Accuracy of measurement is in accordance with the class specific competition rules.

c) The minimum difference between two consecutive records shall be 0.1 km/h.

4.2.2.2. Race Time Competition Records

a) Race Time records can be set in competition class F2C, 100 laps, 10 km (sub class 136) and 200 laps, 20 km (sub class 137).

b) The record figure will be the time recorded for completing the appropriate course.

c) The accuracy of the recorded time is according to the class specific competition rules.

d) The difference between two consecutive records shall be 0.1 seconds or more.

4.3. Radio Control

4.3.1. Open Records

4.3.1.1. Model Characteristics

The loading of the surface area must not exceed 75 g/dm^2.

4.3.1.2. Controlling the Model

For radio controlled model aircraft and aerostats the pilot must be in direct control of the model aircraft via a transmitter for the whole of the flight.

4.3.1.3. Sight of the Model

For radio controlled model aircraft and aerostats the model aircraft must be in the pilot's sight for the whole of the flight other than for momentary periods.

4.3.1.4. Launching

a) A glider is launched by means of a cable of 300 m maximum length.

b) 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^2.

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) An assistant may operate the launching 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) Seaplanes must take off from a water surface. The landing gear must remain attached to the model throughout the flight.

4.3.2. Competition Records

In classes F3D and F5D, records may be set only in World or Continental Championships (record nos. F83 and F90 in Table I).

4.4. Aerostats

4.4.1. Model Characteristics – General

Dimensions: The nominal volume of the envelope, as well as overall length, width and height, must be recorded.

Weight: Weight is to be assessed including fuel, while the model is deflated.

4.4.2. Take Off

Take off must be from the ground.

4.4.3. Flying Site

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

4.4.4. Hot Air Balloons

4.4.4.1. Specific rules for stationary flight duration records (record nos. F227 and F229 in Table 1)

a) The weight of gas for the burner is limited to 5 kg whatever the size of the balloon.

b) 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.

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

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).

4.4.5. Gas Airships

For gas airships, the envelope may contain non-flammable, lighter-than-air gas (helium).

The model airship must be trimmed to near equilibrium static heaviness (Sporting Code F7 Aerostats).

4.5. Space Models

4.5.1. Competition Records

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 current edition of Sporting Code**,** Section 4, Volume S.

4.5.2. Model Specification

All models used for establishing or surmounting the existing record must correspond to all regulations of the current edition of the Sporting Code, Section 4, Volume S.

4.5.3. 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.

4.5.3.1. 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.

4.5.3.2. 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.

4.5.4. 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.

4.5.5. 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 current edition of the Sporting Code, Section 4, Volume S. 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 ensure that these purposes have been achieved.

PART FIVE – SPECIAL RULES FOR RECORDS

5.1. Duration Records

5.1.1. Open Records

5.1.1.1. Flying Site

Duration 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.

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

e) 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.

f) 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.

g) 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.

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

i) The loss of altitude between the starting and landing points must not exceed 2 metres for each minute of flying time.

j) 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

5.1.1.3. Timekeeping

a) In the event the time is taken by using calibrated 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 Airsports Control. In such cases the time which is established is that recorded by the barograph or electronic device.

5.1.1.4. Accuracy of Measurement:

a) The stopwatches shall be calibrated to an accuracy of better than 1* 10-5 (which is equivalent to approximately 1 second per 24 hours).

b) Recorded time is truncated to full seconds.

5.1.1.5. Minimum Difference between Consecutive Records.

The minimum difference between two consecutive records is 1 second (or for duration records above 24 hours - one minute).

5.1.2. Competition Records

5.1.2.1. The accuracy of measurement is according to the class specific rules.

5.1.2.2. The minimum difference between two consecutive records is equal to the accuracy in the result of the competition.

5.2. Distance Records in a Straight Line

5.2.1. Types

There are two possibilities of setting a distance record in a straight line:

a) Straight Distance from A to B; and

b) Goal and Return, that is, from A to B and back to A.

5.2.2. 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 (8.2.1. to 8.2.3.)

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 0.5% for distances in excess of 500 km.

5.2.3. Minimum Increase between Consecutive Records

The minimum increase of record distance shall be 0.2% for distances up to 500 km and 1% for distances over 500 km.

5.2.4. 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. At take-off, rebounds are not allowed. 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.

5.2.5. Point of Landing (see 3.3)

For radio controlled model aircraft 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.

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

5.2.6. Transport

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.

5.2.7. Turning Point

In the case of Goal and Return distance records, the turning point must be as specified for the landing point in Rule 5.2.5. and the official observers must certify that the turning point has been properly rounded.

5.3. Speed Records in a Straight Line

5.3.1. 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) For radio controlled model aircraft, the base must be 200 m, except for airship indoor records, where the base must be 25 metres.

c) The course must be flown in both directions within 30 minutes. For all radio controlled model aircraft, it must be traversed in both directions without any intermediate landing.

d) For a base of 200 m, 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. For other bases the descent must be less than 15% of the base.

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.

Note: For radio control speed record attempts, the model aircraft must be fitted with a device to stop the motor by radio control.

5.3.2. 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 300 km/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 and +/- 0.5 metre for position on both sides of the course.

c) The data that the Directing Official signs must be the data generated automatically at the time of the flight. Hand-written data is not acceptable. These data must be included in the record attempt dossier (par. 7.3)

d) The speed of a run is calculated by dividing the measured time over the 2 runs by 400 metres.

e) The measured speed will be rounded to the lowest 0.1 km/h.

5.3.3. Minimum Difference between Consecutive Records

The minimum increase of a speed record in a straight line is 1%.

5.3.4. Safety Distances

For records with RC airplanes or helicopters, the closest point of the course to the pilots and all the officials shall be 100 metres minimum.

5.4. Speed Records in a Closed Circuit

5.4.1. Open Records

5.4.1.1. Course

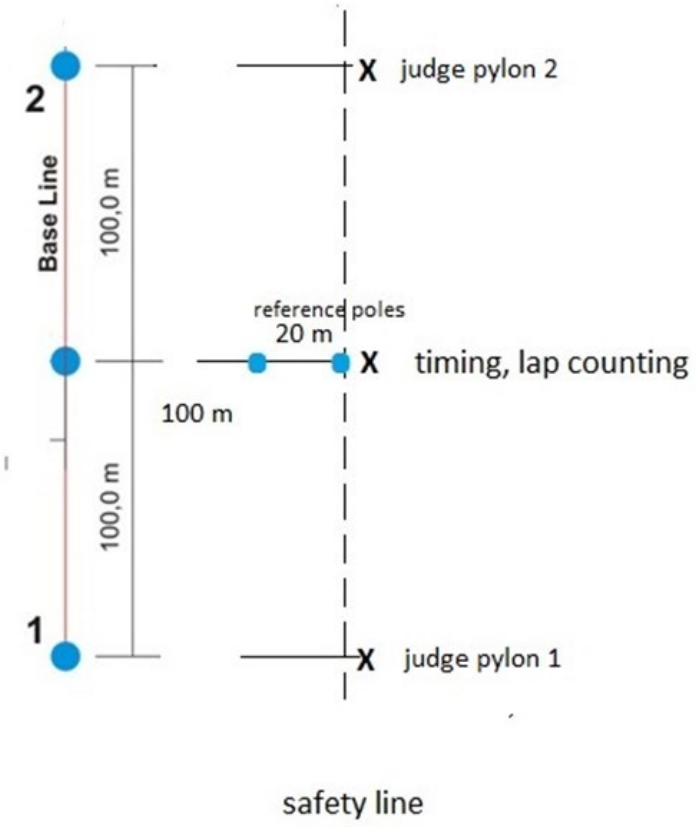
a) The course consists of two poles, defined by two prominently coloured pylons set 200 m apart situated on flat land, or land with a maximum fall not to exceed 1 metre in 200 m within 1 km of the course. Each pylon shall be numbered.

b) A line midway between Pylon One and Pylon Two (i.e. 100 m from each pole), acts as the start and finish line for time measurement midway between them.

c) Time is measured over 2 laps (4 legs).

d) For airship indoor records, the base must be 25 metres, all other dimensions proportional to the diagram for course lay-out below.

Diagram of the Course Layout



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

5.4.1.2. Gliders must be free of the launching cable prior to crossing the Start/Finish line.

5.4.1.3. The flight is voided if models which land prior to completion of the course, or intrude into the forbidden airspace (except after timing is completed).

5.4.1.4. There is no altitude restriction or prohibition against circling in thermals outside the course.

5.4.1.5. Timekeeping

a) The timing of speed records must be effected by timing instruments approved by the National Airsports Control. The accuracy of the timing instruments shall be 0.01 second.

b) Timing begins when the model aircraft crosses the Start/Finish line and ends when the model after 2 full laps (4 legs) again crosses the Start/Finish line.

c) Timekeeping must be effected by two timekeepers. The difference between the times registered by the two timekeepers must not exceed 12/100 of a second.

d) The pilot, his helper, timekeepers and the timing equipment must remain at their location during the record attempt.

e) The speed is calculated by dividing the measured time over the 2 laps by 800 metres.

f) The measured speed will be rounded to the lowest 0.1 km/h.

5.4.1.6. Pylon Judges

a) The two pylon judges will be situated on the positions as indicated and will raise a well visible flag when the model aircraft or airship infringes the space bounded by the poles. Infringement is not allowed, the pilot will have to return and pass the pylon again.

b) Each pylon judge will signal with a light when the nose of the model aircraft has passed the pylon.

Other types of signals may be used, as long as they give the relevant information to the pilot.

5.4.1.7. Role of Helper

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 but give no other assistance apart from verbal information, and give verbal information, but not other.

5.4.1.8. Minimum Difference between Consecutive Records

The minimum increase of a speed record in a closed circuit is 1%.

5.4.1.9. Safety Distances

The distance of the course to the pilots and all the officials is indicated in the diagram of the course lay out

5.4.2. Competition Records

May be set in classes F3D and F5D (records nos. 83 and 90).

5.4.2.2. Accuracy of measurement is according to class rules: 0.01 seconds, as recorded in the official results.

5.4.2.3. Minimum difference between consecutive records : 0.01 seconds.

5.5. Distance Records in a Closed Circuit

5.5.1. Flying Site

Distance in an outdoor 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.

5.5.2. Course

Paragraphs 5.4.1.1., 5.4.1.2. and 5.4.1.4. apply.

5.5.3. Distance Measurement

5.5.3.1. Distance measurement begins when the model aircraft or airship crosses the Start/Finish line and ends when the model crosses the Start/Finish line for the last time (in either direction).

5.5.3.2. The counting of laps must be effected by two officials.

5.5.3.3. The officials who count the number of laps must remain at their location during the record attempt.

5.5.3.4. The pilot and his helper, must remain at their location during the record attempt.

5.5.3.5. Distance is measured in legs of 200 metres (for airship indoor records – legs of 25 metres) i.e. each time the model passes the start/finish line in either direction. Fractions of a leg will not be included in the record claimed.

5.5.4. Pylon Judges

See 5.4.1.6.

5.5.5. Role of Helper

See 5.4.1.7.

5.5.6. Minimum Difference between Consecutive Records

The minimum increase of a distance record in closed circuit is 1 leg (200 metres).

5.5.7. Safety distances

See 5.4.1.9

5.6. Altitude Records

5.6.1. Verification of Measurements

5.6.1.1. 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 Airsports 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 Airsports 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.

5.6.1.2. If theodolites or telemeters are used, the National Airsports 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.

5.6.2. Accuracy of measurement

The accuracy of the recorded height has to be better than 0.5%.

5.6.3. Minimum Difference between Consecutive Records

The minimum altitude difference between consecutive records shall be 1%.

5.6.4. 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. In the case of simultaneous attempts for distance and altitude, the landing must be within 500 metres of the indicated landing point for the distance record.

PART SIX – 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 ensure that these purposes have been achieved.

6.1. Requirements of Dossier

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 6.3. below.

e) For Class F records, 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).

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.

6.2. Supporting Data

a) Whenever numerical limits are established for special categories, such as for point of landing, duration of motor run, or height, 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 the flying site, have been met. Documentation such as photographs, maps, and weather observations may be part of such statement.

h) Time-keeping

   i) Describe in brief, the method of timekeeping employed.

   ii) No. of stop watches

   iii) Position of timekeepers

   iv) Electronic equipment used

   v) For speed records in a straight line and control line of more than 300 km/h, the data generated automatically at the time of the flight must be included.

i) Measurement of course base (applies for speed and distance in a closed circuit)

   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 5.2.2 (measurement of distance in a straight line), 5.6.1 (verification of altitude measurements), must also be observed and recorded in the dossier.