

***MODEL AERONAUTICAL ASSOCIATION
of AUSTRALIA Inc.***



AUSTRALIAN OFFICIAL RULES

- Section 7 - R/C Australian Flying Scale Models**
- R/C Glider - Stand Off Scale**
 - R/C Giant Scale Racing**

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1. **R/C AUSTRALIAN FLYING SCALE MODELS**

1.1. General Rules and Standards for Static Judging of Australian Flying Scale Models

1.1.1. Competition Classes and Model Characteristics

Note: The determination of a models weight will be in accordance with MOP015 as amended from time to time.

- a) The model shall be a replica of a full size man-carrying heavier-than-air aircraft which has flown. Model helicopters or model aircraft with powered rotors are not acceptable.
- b) An Australian Sport Scale model shall not weigh more than 15 kg including pilot figure but excluding fuel.
- c) An Australian Large Scale model shall not weigh more than 15 kg but not greater than 25 kg or have a wingspan or fuselage length of no less than 1.65 metres for multi-winged aircraft and no less than 2 metres for a monoplane.
- d) An Australian Giant Scale model shall weigh more than 25 kg but not more than 50kg and have a wingspan no less than 3 metres.
- e) A contestant shall enter only one model per class at any contest.
- f) If a competition is declared to be flying only, rules 1.1.5.1 to 1.1.5.9 will not apply.

1.1.2. Judges.

The organisers shall appoint three scale judges, who shall determine the degree of fidelity to scale. The Judges should discuss each item as a team and attempt to arrive at a unanimously agreed score for each item although each judge retains the right to differ.

1.1.3. Coefficient.

Where a Coefficient [K] is noted, scoring shall be between 0 and 10. The score shall then be multiplied by the Coefficient [K]. Fractions of a point may be awarded by judges when scoring static and flight segments.

1.1.4. Remarks.

- a) All models shall become airborne in the manner of the prototype. No hand launching shall be attempted.
- b) No parts of a model, except the propeller, spinner and aerial may be changed between static judging and flying. Note: The size and shape of the spinner may not be changed.
- c) Metal bladed flying propellers are forbidden.
- d) Explosives may not be carried or dropped from a model.
- e) Gyro / auto-pilot devices shall not be used except to the extent permitted from time to time under the CIAM classes F4C and F4H.
- f) Rocket or pulse jet engines may not be used.

1.1.5. Proof of Scale

1.1.5.1. Proof of scale shall be the responsibility of the contestant.

1.1.5.2. The exact name and model designation of the subject aircraft shall be indicated on the entry blank in "Proof of Scale" presentation.

1.1.5.3 The scale to which the model is built must be stated on the "Proof of Scale" presentation.

1.1.5.4 To be eligible for fidelity to scale points, the following documentation must be submitted to the judges:

- a) Minimum documentation shall consist of an accurate scale drawing of the full-size aircraft that shows at least the 3 main aspects of Side View, Upper Plan View and Front End View. . These drawings must have a span or length, whichever is the greater, of a minimum of 250mm and a maximum of 500mm and be submitted in triplicate, together with a minimum of three photographs of the type in general. In the event of a conflict between the photographs and the drawing, the photographs take precedence.
- b) To be eligible for colour and markings scoring, the colour scheme must be proven by:
- i). a colour print or photo;
 - ii). a printed colour description; or
 - iii). paint chips or samples of paint or fabric etc. either from the prototype or identical to that used on the prototype, subject to those items being authenticated by an authoritative source such as the manufacturer or owner of the prototype.

A good example of an ideal colour and outline description is the "Profile" publication or similar.

Note: If no "proof of scale" material accompanies the model, only craftsmanship and flight points may be awarded.

1.1.5.5. Static Judging

Static judging shall be carried out at a minimum distance of five metres distance from the model. Details not visible in flight are not to be considered in scoring the model. No measurements are to be taken.

1.1.5.6. Static Scoring

Side view (Fidelity to scale per scale documentation)	K= 15
Plan view (Fidelity to scale per scale documentation)	K= 15
End view (Fidelity to scale per scale documentation)	K= 15
Colours (per scale documentation)	K= 10
Markings (per scale documentation)	K= 15
Scale realism	K= 10
Craftsmanship	
Competitor designed and built	K= 20
Scratch built from commercial plans	K= 16
Built from a kit	K= 12
Built from substantially pre-made parts such as fibreglass fuselage and foam wings	K=8

1.1.5.7. Bonus Points

No bonus points, for complexity or other, will be awarded.

1.1.5.8. Scoring

The combined Fidelity to Scale and Craftsmanship points shall be the aggregate of points awarded by three judges. These points may be used for final classification only when the model completes an official flight.

1.1.5.9. Builder of the Model

The competitor shall sign a declaration that he/she is the builder of the model entered. The builder shall nominate the type of construction as outlined under 1.1.5.6.

Craftsmanship: The requirements of the Builder of the Model rule shall be satisfied if the individual modeller has constructed the airframe from raw materials or from prefabricated components as found in a commercial kit such as fibreglass cowl(s) and

fuselage(s), foam cores, canopy or plastic moulded exterior details, wheels etc. All final assembly and finishing (painting) shall also be performed by the same individual with material of his or her choosing. Any other commercially advertised products may also be used without penalty to the modeller at the various stages of construction. Hardware independent of the airframe (visible or not) requiring machining or welding to assure reliability, safety or the required operations of the scale model aircraft such as engine accessories and undercarriage gear may be commissioned independently when in the judgement of the modeller, commercially available items are not adequate. No other airframe construction may be commissioned in this manner. If found in violation, the competitor shall be disqualified from the contest.

1.2. **General Rules and Standards for Flight Judging of Australian Flying Scale Models.**

Flight judging and scoring will be according to the CIAM Rules and Judges Guide for F4C, in force from time to time.

2 R/C GLIDER - STAND OFF SCALE

Thermal and Slope

2.1. **Objective:**

To provide the opportunity for equitable competition between radio controlled scale model gliders.

2.2. **General Characteristics:**

- a) Maximum weight 15 kg
- b) An aircraft is to comply with MOP015. Aircraft weighing more than 7 kg require a Permit to Fly.

2.3. **Radio Equipment.**

Radio control equipment shall meet ACMA requirements and MAAA MOPs.

2.4. **Ownership.**

The entrant must be the owner of the model and must operate the controlling transmitter.

2.5. **Common Procedures.**

The following apply to both thermal and slope gliders:-

- a) the competition will be in two parts; static and flying;
- b) marks in both these parts will be awarded from 0 to 10 inclusive in steps of $\frac{1}{2}$ points and will then be multiplied by the appropriate "M" factor.
- c) entrants shall supply the following:-
 - 1] a signed declaration of the origin of the model stating which category in paragraph 6.6.6.a is appropriate;
 - 2] a three view drawing of minimum scale 1 : 72;
 - 3] colour photographs or other means of verifying accuracy of colour, markings and appearance.

2.6. **Static Judging.**

Models shall be viewed from outside a circle of five metre radius during static judging. All items such as cockpit or cabin will also be judged if visible from outside the viewing circle.

The model will be marked for the following, with the "M" factors as indicated to apply:

	Thermal	Slope
Accuracy of Outline	7	18
Finish, Colour and Markings	6	15
Scale Structure	5	N/A
Surface Detail	5	N/A
Complexity of Type	N/A	12
Craftsmanship	N/A	15
Maximum Total of Points per Judge	230	600

2.61 **K Factor**

Marks awarded in static judging of thermal and slope shall be multiplied by an appropriate K factor selected from the following table to reflect the entrant's involvement in the construction of the glider:-

	Thermal	Slope
Ready Built (not built by entrant)	0.5	0.5
Built substantially from a ready made kit	0.6	0.8
Built from a kit of parts but with a substantial amount of work by the entrant	0.8	0.85
Built from scratch from other person's plans	0.9	0.9
Built from scratch, to own design.	1.0	1.0

2.7. **Flying Section**

2.7.1. **Thermal Gliders**

2.7.1.1. **Launching**

The model may be launched by any recognised method.

2.7.1.2. **Attempts**

A repeat attempt is permitted only if:

- the launch is aborted;
- the flight is not judged through a fault of the judges; or
- the flight is not timed through a fault of the timekeepers.

2.7.1.3. The entrant shall make two flights during which the following manoeuvres shall be scored by the judges:-

1] Take off (ROG or release from the hand)	M = 2
2] Option 1	M = 4
3] Option 2	M = 4
4] Option 3	M = 4
5] Approach and Landing (both flights)	M = 5
6] Realism in Flight (both flights)	M = 5

Options may be any recognised manoeuvre appropriate to the type, acceptable to the judges and nominated to them before the flight. Each option shall be attempted only once but at any time during either flight.

2.7.1.4. The maximum number of points/judge in the thermal flying section is 360.

2.7.2. **Slope Gliders**

2.7.2.1. The flying section for slope gliders is divided into two parts - a proving flight and scale flight.

2.7.2.a **Proving Flight.**

1]	360 degree turn	M = 5
2]	Straight stall and recovery	M = 5
3]	Approach and landing	M = 6
4]	Continuity	M = 6
	Sub-total	220

2.7.2.b **Scale Flight**

1]	Thermal turns	M = 6
2]	Straight and level along slope	M = 6
3]	Dive and climb	M = 6
4]	Option	M = 6
5]	Approach and landing	M = 7
6]	Continuity and Realism	M = 7
	Sub-total	380

2.7.2.c The total points per judge is 600. If the proving flight is not completed, no points shall be awarded for the static section of the slope competition.

2.8. **Scoring**

The entrants final score is the sum of all points achieved in both parts of the competition after the appropriate K and M factors have been applied.

The maximum possible marks per judge is 590 in the Thermal competition and 1200 in the Slope.

In the event of a tie, the entrant with the highest score for Realism in Flight [Thermal] or Continuity and Realism [Slope] shall be the winner.

3 **GIANT SCALE RACING**

Giant Scale Racing consists of two classes, A.T.6 and Golden Era

3.1 **A.T. 6**

This will be a standard class based on the MIDWEST AT6 kit.

- a) Maximum engine capacity of 1.25 c.i.; such engines may be spark ignition or glow and must be stock, unmodified, and commercially available.
- b) Super chargers, Rootes type blowers, air chambers pumps and tuned pipes are NOT allowed. Carburettors may be changed as long as the replacement carburettor is commercially available, and designed for engines of 1.25 c.i.
- c) Mufflers must be used and noise criteria to be a maximum of 98 db measured at 3 metres over mown grass.
- d) Propeller must be commercially available, minimum diameter 14 inches, maximum pitch 12 inches. Propeller may be reworked, but the brand marks must be intact and visible.
- e) Any MAAA legal fuel may be used. Crankcase or Muffler pressure, in-flight mix control etc. may be used.
- f) Aircraft is to be built from the Midwest kit, or may be constructed from plans to identical dimensions, or from an approved fibreglass kit, to identical dimensions.
- g) Minimum aircraft weight is 14 lbs. (without fuel). Pilot must be installed.
- h) Fixed or retractable landing gear may be used, with steerable tail wheel.
- i) Dummy engine allowed and encouraged (Nose Weight). A scale size spinner must be fitted.
- j) No restrictions on colour scheme. Race numbers will be allocated on a first come, first served basis. However, models that have been registered for the previous races will be given preference for their number.
- k) No "Builder of the Model" rule.

3.2 GOLDEN ERA CLASS

Entries are to be a scale representation of any full size aircraft that either attempted to qualify, qualified, or competed in either the Thompson Trophy Races in the U.S.A., or the King's Cup races in the United Kingdom, or other races of similar type during the "Golden Era". No "Builder of the Model" rule applies.

a) SIZE OF MODEL

Model must conform to the basic scale outline, and meet a total minimum size of :

Monoplanes - wingspan plus fuselage length to total 156 inches (3.96m)

Biplanes - wingspan plus fuselage length to total 117 inches (2.97m), with the wing-span being based on the larger wing.

b) SCALE DETAILS

Models are to conform to basic scale outlines. Scale detail eg. rivets, panel outlines, etc. are not compulsory. Three views or other documentation is required to verify scale likeness. A clear windscreen or canopy as applicable, and a pilot bust installed in the cockpit is required; also a minimum instrument panel with at least three scale size gauges.

c) COLOUR SCHEMES

Scale colour schemes are not required and a personalised scheme is encouraged to assist in identification of the model should more than one example of a prototype be entered. Colour schemes should reflect the schemes of the era etc.

d) AIRCRAFT WEIGHT :

MINIMUM WEIGHT - Minimum weight of 3 lbs. per 10 cc. is required ie. 100 cc. engine requires a minimum weight of 30 lbs. (Note: maximum engine size is 100 cc) Weight measured without fuel.

Absolute minimum weight of 7 kgs.

MAXIMUM WEIGHT : Aircraft must have a valid permit to fly which fixes the maximum weight at 25 kg (without fuel).

e) AIRFOILS

Wing and tail group airfoils may be any suitable for model aircraft, but must follow scale planform. Tail dimension may be increased by 5% to ensure good flying characteristics.

Control surface dimensions may be varied as long as the aircraft outline is not affected.

Flaps are not compulsory even if the original aircraft used them.

f) LANDING GEAR

Must be scale. ie. If the original aircraft had retractable gear the model must do so. This includes the use of wheel pants, if used on the original.

Landing gear must be robust enough to allow normal, and repeated taxi, take-off, landing and taxi operations.

A steerable tail wheel must be fitted. (may be used in place of a tailskid.)

- g) **FLYING WIRES & STRUTS :**
Flying Wires that are fitted to the prototype must be fitted, but need not be functional. Wires must be .032" diameter or structural metal, and cannot be made of nylon cord or other material.
- h) **ENGINES :**
A maximum size of 100 cc. is allowed. (6.0 cu. in.) Spark ignition engines must be fitted with an external kill switch. Glow engines must be able to shut off from the TX.
Any fuel that is MAAA legal may be used.
- i) **EXHAUST SYSTEMS :**
No tuned pipes or exhaust augmentation is allowed. Effective Mufflers must be fitted. A noise limit, of 98 db measured at three metres over grass, will be applied. Engines must be cowled as per the prototype, and only the spark plug, ignition wire and carburettor should protrude. Exhaust should exit as close as possible to the scale position.
- j) **RACE NUMBERS**
Numbers will be allocated and must be displayed as on the full size aircraft.
- k) **TECHNICAL INSPECTIONS AND TEST FLIGHTS**
All entrants must produce for inspection the Permit to Fly. Random safety inspections may be carried out if the Safety Officer so requires.
Any repaired damage will be checked by an appropriate MOP inspector.
Any aircraft that exhibits unpredictable handling characteristics in the air and on the ground, such as uncontrolled take-off direction, violent pitching, skidding or unpredictable flight, will be cause for disqualification.
Aircraft must race in the same configuration that it is presented for scrutiny, ie. spinners, cowls, wheel pants etc. cannot be removed for racing.
- l) **CONTROLS ETC.**
RADIOS :

TX : Must be 2.4GHz.

SERVOS: Shall be of sufficient power for the size and weight of the aircraft.

For the GOLDEN ERA class the following minimum ratings apply.
- i. **Elevators:** Must use one servo a side, each with a minimum torque rating of 69 in-oz/ 4.5 kg-cm.
Alternatively one servo driving both sides with a minimum rating of 105 in-oz/ 7kg-cm.
 - ii. **Ailerons:** Each aileron must use a servo with a minimum rating 69 in-oz/4.5 kg-cm.
- Servos must be visible for inspection. ie. with the wing off, or through an access panel.

- iii. **Clevises:** All flight control surfaces must have linkage and clevises of at least 4-40 size Pull-Pull activation is recommended with 4-40 linkages. Clevises must have keepers, and control horns must be of sufficient size and strength and size to handle the large loads, and must have minimal play.

Note - Aerodynamically balanced control surfaces are recommended.

- iv. **Batteries:** All radio systems shall be powered by batteries of 1200 mah minimum capacity (1800 mah recommended)

Note :- in systems that use two receivers, 2 x 700 mah would meet this requirement.

3.3 COURSE:

The Race will consist of 10 laps of a course determined by the Race Organisers, having regard to the site, spectators, safety etc.

3.4 RACE PROCEDURE

There will be a three minute starting time. During this period the model may be started and released into the course, with the approval of the Starter. No one can start after the completion of the three minutes. At the end of the three minutes the one minute count down will commence. During this time, the contestants will circulate in the course.

The race will commence at the end of the one minute count-down. Any entrant crossing the line before the end of the one minute will lose one lap.

Entrants may fly a wide last lap to judge the start, but must not turn against other traffic.

One cut will incur a 10% penalty, two cuts will be a Zero.

3.5 HEATS

The number of heats will be determined by the organiser depending on the time available and the number of entrants in each section.

The organiser will decide if heats are to be dropped in determining the final result and will inform contestants prior to the beginning of the contest.

3.6 SCORING

The score of each heat will be determined by converting the time to seconds and the placing established by adding the scores from all the nominated heats.