

The South African Model Aircraft Association



Policy

Definition of specification of model aircraft

SAMAA-Policy-PO-18

Table of Contents

1. General characteristics of model aircraft3

1.1 Fixed-wing model aircraft.....3

1.2 Model helicopters.....3

1.3 Free Flight model aircraft.....3

1.4 Heavy model aircraft.....3

1.5 Noise limits.....3

1.6 Other model aircraft.....4

1.7 Model aircraft up to 7kgs4

1.8 Model aircraft between 7kg and 35kg.....4

1.9 Battery pack.....4

1.10 Annexure A -4

1. General characteristics of model aircraft

1.1 Fixed-wing model aircraft

- a) Unless otherwise stated, fixed-wing model aircraft shall not exceed the following general specification:
- | | | |
|------|--|------------------------|
| i. | Maximum flying weight without fuel | 35kg |
| ii. | Maximum wingspan (powered) | 5000mm |
| iii. | Maximum wingspan (unpowered) | 6000mm |
| iv. | Maximum wing loading | 15,00kg/m ² |
| v. | Electric motors, maximum no-load voltage | 42 volts |

1.2 Model helicopters

- a) Unless otherwise stated, model helicopters shall not exceed the following general specifications.
- | | | |
|------|--|--------------------|
| i. | Maximum weight without fuel | 6 kgs |
| ii. | Maximum swept area of lifting rotor(s) counting only once any superimposed areas | 250dm ² |
| iii. | Provided that in the case of co-axial model helicopters whose rotors are further than one rotor diameter apart, the area of both rotors is counted | |
| iv. | Piston motor maximum swept volume - 2 stroke | 15 cm ³ |
| | - 4 stroke | 20 cm ³ |
| | - petrol | 25 cm ³ |
| v. | Electric motors, maximum no-load voltage | 42 volts. |

1.3 Free Flight model aircraft

- a) Free flying model aircraft which are neither radio controlled nor line controlled, shall not have a mass exceeding 5 kg.

1.4 Heavy model aircraft

- a) Model aircraft exceeding the maximum flying weight specifications in 1.1 (a) of 35kgs, shall be registered with the SAMAA management.
- b) Members who have aircraft in the weight bracket of 25-35kg must complete the application for registration (**Annexure A**). The purpose of this will be to create a data base of aircraft and equipment for future use by SAMAA members, who would like to design or acquire models in this weight bracket. This will further assist with the continued safe operation of heavy models and will add tremendous value to get to the future certification of aircraft in the 35-50kg bracket.
- c) Model aircraft up to 35kg may be operated by SAMAA members holding SAMAA proficiency ratings of Silver, and higher. This will be subject to each SIG's, and the SAMAA's individual proficiency ratings required to fly at events, fly-ins, and air shows.

1.5 Noise limits

- a) Fixed-wing model aircraft
- | | |
|----|--|
| i. | All <u>powered model aircraft</u> categories shall be limited to a maximum sound limit of 96 db (A-scale) at 3 metres, over a hard surface, unless the class or category of model has specified lower limits. Specific noise measuring procedures are to be developed by the SAMAA to ensure that the above limits are achieved. |
|----|--|

b) Helicopters

Noise limitation for helicopters in hovering mode shall be as follows:

- i. Over hard surface 89 dBA at 3 metres.
- ii. Over soft surface 87 dBA at 3 metres.

1.6 Other model aircraft

- a) Model aircraft which have not been specifically addressed in this specification must be queried with the SAMAA, who together with the SIG, SACAA and its inspectors will give a ruling.
- b) All competition model aircraft must conform to the safety rules and Sporting Code for their particular SIG.

1.7 Model aircraft up to 7kgs

- a) Any standard commercial equipment with servos rated at 3,6kg/cm or more may be used in model aircraft up to the FAI limit of 7kg.
- b) For larger aircraft in this category, at least one servo per control surface should be used.

1.8 Model aircraft between 7kg and 35kg

- a) Model aircraft which exceed the FAI limit of 7kg must be fitted with heavy duty servos which have the capability of handling the loads that the control surfaces impose on the servos. Standard servos with a rating of 3.6 kg/cm are not suitable for these sizes of aircraft and larger servos suited to the model size should be used, with at least one servo being used for each aileron and one servo for each horizontal stabiliser half being recommended. Use of dual receivers is also recommended on larger model aircraft.

1.9 Battery pack

- a) The battery sizes used on larger aircraft is depended on the number, size, and type of servo loads on the control surfaces. Batteries should be able to sustain power to the onboard radio components for a minimum of one-hour total flying time before recharging is performed. Dependable redundant and fail-safe battery systems are recommended as well as the use of dual receiver units and split control for larger model aircraft.
- b) Other recommendations are:
 - i. Servo arms and control hands should be rated heavy duty.
 - ii. With pull-pull cable systems, a separate tension/torsion bar is recommended.
 - iii. Hinges must be rated heavy duty and be manufactured primarily for larger model aircraft.
 - iv. Clevises and attachment hardware must be heavy duty 4/40 (3mm x 0,5 pitch) thread-and-rod type or as specified by equipment manufacturers for larger models.
 - v. Long servo leads may require to be fitted with anti-glitch devices.
 - vi. All motors, engines, or turbines on larger model aircraft shall have a switch on the transmitter to remotely shut down the motor, engine, or turbine.
 - vii. The use of metal-bladed propellers is prohibited.
 - viii. The use of metal rotor blades or blades containing metal weights, are prohibited for helicopters.
 - ix. The use of pyrotechnics or explosives in or from model aircraft is prohibited.

1.10 Annexure A - Application for registration of large model aircraft

Definition of specification of model aircraft

The airframe, components, materials, installation of equipment, and specification standards of this large model aircraft is suited for the purpose for which it is intended, and it complies with the basic requirements of a large model aircraft.

- a) Builder of large model aircraft and SAMAA membership number:
.....
- b) Owner (if different to above) and SAMAA membership number:
.....
E-mail.....
Cell no.....
Club.....
- c) Current proficiency rating
.....
- d) Has the model previously been test-flown successfully?.....
- e) Aircraft was test-flown at which club.....
- f) Date of test flight
- g) Aircraft name and type (fixed-wing, sport, military, civil, jet, glider, etc.)
.....
.....
- h) Manufacturer of aircraft and country of origin.....
- i) Total AUW, wet (all-up-weight)
.....
- j) Dry weight (without fuel)
.....
- k) Power plant, or turbine (make, size, and output)
.....
- l) Aircraft size (wing span, fuselage length)
.....
- m) State what servos (rating, brand, and manufacturer code) are used in the aircraft, where applicable:
Ailerons (one, two, or more servos).....
Elevators (one, two, or more servos).....
Rudder/s (one, two, or more servos).....
Throttle/ECU.....
Flaps/Spoilers/Airbrakes.....
Retracts (mechanical, electrical, pneumatic, and servo type and ratings).....
- n) Is the wing of variable geometry, and what actuation method is used?
- o) What receiver, battery, and switch redundancy is employed in the aircraft?
.....
.....
- p) Transmitter (type, brand, frequency)
.....
- q) Has fail-safe been programmed?
- r) Are gyros/automated systems used? (state type, brand, etc.)
.....
.....

Definition of specification of model aircraft

- s) Is feedback to the Tx/telemetry being used?
- t) Main construction method, and materials used.....
- u) Method of finish (paint, film, covering, etc.)
.....

Signature..... Date.....