

MODEL AERONAUTICAL ASSOCIATION OF AUSTRALIA



MAAA GAS TURBINE RULES

MOP030

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Table of Amendments

Paragraph	Brief description of change	Change incorporated by
2.0 Definitions	Amend Giant Model maximum weight to 150Kgs Amend CAR to CASR (Civil Aviation Safety Regulation)	MAAA Secretary January 2015
3.0 General	Deleted reference to Gas Turbine Subcommittee. The MAAA Secretary to handle any queries.	
Annex	To avoid confusion, the Annex containing the sample form was removed. Refer to the MAAA website to view or download the relevant forms.	
3.0 General (l)	Remove requirement for mandatory independent means of shutting down engine although still recommended for rotary wing aircraft.	MAAA Secretary May 2015

This Policy and/or Procedure forms part of the MAAA Manual of Procedures. This entire document is for the use of all classes of members of the MAAA in the conduct of activities associated with the MAAA and is not be used for any other purpose, in whole or in part, without the written approval of the MAAA Executive.

Shading of **text** identifies changes to the previous version.

MAAA Gas Turbine Rules

1. PURPOSE

- 1.1 The purpose of this publication is to provide all affiliate members of the MAAA a ready reference to their obligations and regulations as required under MAAA rules and procedures for the safe operation of gas turbine model aircraft.

2. DEFINITIONS

- Aircraft Inspector**.....In the context of this document, it is to mean a financial Affiliate Member of the MAAA appointed by the MAAA to inspect specific types of Model Aircraft. Refer to MOP015: *Heavy Model Aircraft Inspection and Operation Procedure* for obligations of a Model Aircraft Inspector.
- Club**.....A Club properly affiliated with an MAAA Ordinary Member.
- Fixed Wing Aircraft** An aircraft having most of its lifting surfaces fixed in size and position.
- Gas Turbine Endorsement** ... An endorsement, authorised by the MAAA, added to an existing MAAA Aircraft Inspector Status. This endorsement allows inspection and issue of the appropriate permits for gas turbine powered model aircraft to a maximum mass allowed by his/her aircraft permit.
- Giant Model Aircraft**Any model aircraft with a dry mass, (excluding fuel, but including all batteries if electric powered) of more than 25Kgs but less than 150Kgs.
- Large Model Aircraft**Any model aircraft with a dry mass (excluding fuel, but including all batteries if electric powered) of 7Kgs or more, to a maximum of 25Kgs.
- MAAA**.....Model Aeronautical Association of Australia Inc.
- MOP**.....Manual of Procedures.
- National Fire Rating System**....A nationally agreed system, which will help decide what actions need to be taken depending on the predicted fire danger.
- Rotary Wing Model Aircraft**.... Otherwise know as a helicopter.
- Permit to Fly** A document valid for 3 years from date of issue, issued by an MAAA Aircraft Inspector holding Gas Turbine endorsement following inspection carried out in accordance with MAAA guidelines. See MOP015: *Heavy Model Aircraft Inspection and Operation Procedure*.

3. GENERAL

For the purpose of these rules, aircraft utilising Home Built Turbines are subject to the same operating conditions as those powered by commercially manufactured turbines however any application for a Permit to Fly that involves a Home Built Turbine must be referred to the MAAA Secretary for direction prior to any Aircraft Certification being carried out.

These rules are applicable for any model aircraft that is powered with a Gas Turbine engine. This includes GT Helicopters and GT Turbo Prop fixed wing aircraft in addition to conventional GT Jet aircraft.

- (a) Multi-engine installations must be segregated in separate pods or be installed in such a way that cross ignition cannot be caused.
- (b) Fuels are limited to those specified by the engine designer/manufacturer.
- (c) A CO₂ or Powder fire extinguisher suitable for the task must be present with safety pin removed during engine(s) start up and shut down and during crash recovery.
- (d) For organised events involving the public the event CD must ensure at a minimum, one CO₂ fire extinguisher is present at the starting location in addition to operators' personal fire extinguishers. A second CO₂ fire extinguisher is to be available for recovery deployment.
- (e) No gas turbine powered aircraft are to be flown during times of total fire bans as enforced by State and Territory regulations.
- (f) For organised events all operators of GT power aircraft are required to have an assistant present during engine(s) start up, the flight and engine shut down.
- (g) During start up, turbine operators are required to maintain a clear distance of 8 metres from any other personnel not associated with turbine start-ups and they are to advise others that no smoking is permitted within 8 metres of a turbine start up area.
- (h) Multiple turbine start-ups are permissible in the designated start-up area provided that there is a 2 metre separation between aircraft and that the 8 metre separation is maintained from non associated parties.
- (i) For organised events, the event CD must ensure that a designated starting area at least 8 metres from other personnel is maintained and that "No Smoking" signs are displayed.
- (j) During start up and shut down the model must be suitably restrained.
- (k) During start up and while the model is transported to and from the flight line, tailpipes must always be placed in a direction away from other personnel, public and property.
- (l) It is a requirement that the installation include a manual (by hand) means of shutting the turbine down and that this method be accessible during the whole start up and shutdown phase of the turbine. For rotary wing aircraft, it is recommended that a secondary cut-off, independent of the ECU, be installed. For fixed wing aircraft this is at the pilot's discretion.

- (m) The engine(s) and fuel system installation must prevent fuel from being forced or siphoned to the engine(s) during refuelling of the aircraft.
- (n) Mechanical, electronic over-speed or over-temperature prevention must be provided for the engine(s)
- (o) Operators must follow the manufacturer's installation and operating guidelines at all times: this is in addition to any further installation requirements as prescribed in these regulations.
- (p) Where failsafe is a feature of the installed radio system then the failsafe for the turbine engine control must be set to either shut down the engine(s) or return the engine(s) to idle power in the event of a failsafe occurrence.
- (q) All gas turbine powered aircraft are subject to an airframe and turbine installation inspection in accordance with MOP015 irrespective of the aircraft weight and must undergo an assessment.
- (r) In the case that any turbine powered aircraft sustains damage to any flying surface, control surface, fuselage or structural mounting points, its Permit to Fly will be deemed to be suspended until such time that repairs are carried out and the model undergoes an airworthy examination and the Permit to Fly is revalidated by an appropriate Aircraft Inspector holding a Gas Turbine Endorsement. The model is not required to undergo a complete Permit to Fly Inspection.

4. INSPECTION FORMAT

There are four aspects to the inspection and issue of a Permit to Fly for gas turbine powered aircraft.

- (a) The airframe is subject to an inspection to assess its suitability in terms of construction, hardware installation, radio equipment, suitability for the turbine(s) installed and airworthiness.
- (b) The installation of the turbine(s) in the airframe is inspected to assess the suitability of the installation, heat insulation and to ensure that the remote and manual shut down features as required in Section 3 (l) are fitted and suitable for the purpose.
- (c) The operator must demonstrate the safe operation of the turbine powered aircraft through a ground run demonstration including fuelling, start up and shut down procedures. This will be followed by a test flight of the aircraft by the operator to demonstrate the airworthiness of the aircraft and the operator's ability to manage the aircraft safely and within their limits.
- (d) With respect to the flight inspection, this may be accomplished over a series of flights not necessarily on the same day: i.e. the operator may choose to have an experienced operator fly the aircraft (provided they have a current Permit To Fly for the aircraft) and start their inspection flight with circuits only, following up with take offs and landings in subsequent flights. These levels will be noted by the Inspector on the Permit to Fly. Once a full flight combining take off, circuits, aerobatic manoeuvres and landing has been achieved then the operator will have achieved a valid Permit to Fly.

5. **CERTIFICATION**

- (a) Certification of turbine powered aircraft will be carried out using the Check List for Inspection of a Gas Turbine Powered Model, the Permit to Fly and if applicable the Giant Pre and During Construction/Assembly Inspection Assessment by a designated MAAA Aircraft Inspector for that type of aircraft who holds a Gas Turbine Endorsement. Refer to MOP015: *Heavy Model Aircraft Inspection and Operation Procedure*.
All Check Lists and the Permit to Fly form are obtained from the Forms Section of the MAAA Manual of Procedures on the MAAA web site (www.maaa.asn.au).
- (b) The onus for organising inspection lies with the operator.
- (c) No MAAA affiliated Club shall permit the flight of a gas turbine powered aircraft unless the operator is in possession of a current Permit to Fly or is in the process of obtaining certification from an MAAA Aircraft Inspector for that type of aircraft who holds a Gas Turbine Endorsement.
- (d) The operator is required to sign the Permit to Fly as certifying their assurance that they understand and undertake to operate the aircraft in a safe and responsible manner and within the MAAA rules and regulations.
- (e) Unless the aircraft sustains any damage (refer to Section 3 (r)) the Permit to Fly is valid for three years from date of issue.
- (f) The safe operation of any turbine-powered aircraft remains the sole responsibility of the operator.

6. **FORMS**

- 6.1 Application for Fire Ban Waiver – Form No MAAA025
- 6.2 Check List for Inspection of a Gas Turbine Model Aircraft – Form No MAAA039.
- 6.3 Permit to Fly – Form No MAAA038.

Forms are available from the Forms Section of the Manual of Procedures on the MAAA web site: www.maaa.asn.au