AMA Gas Turbine Program

Approved by AMA Executive Council (EC) on **October 26, 2024**

It's the flyers responsibility to comply with and the CD's responsibility to enforce these regulations! All regulations are applicable to all turbine model categories unless otherwise noted.

Airframe Requirements

1. Turbine-powered model aircraft may be equipped with:
   a. Production engine(s);
   b. Kit-built engine(s) built in compliance with AMA Regulations for Assembly and Operations of a Kit Built Turbine Engine for RC and CL Models (AMA document 510b); or
   c. Non-production engine(s) built in compliance with AMA Rules for Design, Construction, and Operation of Non-Production Gas Turbine Engines for RC and CL Models (AMA document 510c).
2. AMA retains the right to exclude any engine (individual or type) which is believed to exhibit a safety concern.
3. The following categories of turbine-powered RC model aircraft and their category-specific requirements are:
   a. Fixed-wing: The maximum velocity will be 200 mph. The total combined installed static thrust for all engine(s) shall not exceed 50 lbs. De-tuned engine thrust settings will be accepted (the pilot shall provide manufacturer documentation). With the exception of hand-launched aircraft which have no undercarriage and a flight weight under 7.5 pounds wet, the fixed-wing models shall:
      i. be able to come to a controlled stop on command with the engine at idle on a level hard surface; and
      ii. be equipped with controllable rudder(s);
   b. Rotary-wing aircraft: The output power of the turbine shall be governed such that the rotor head speed does not exceed the manufacturer's recommended RPM for any rotor head component. The rotor head shall be able to be disengaged from the power source and remain stationary either from the use of a throttle kill mechanism or a clutch system;
   c. Control-line: The model shall successfully perform a pull test of 55 pounds or more, as described in the current CL Scale Competition Rules. A restraining cable (minimum 0.035 stranded wire) shall be attached from the engine to the bellcrank mounting system. The gross weight limit is 20 pounds. The maximum aircraft velocity allowed is 100 mph; and
   d. Fixed-wing Turboprop: Turboprop-equipped models shall:
      i. be able to come to a controlled stop on command with the engine at idle on a level hard surface; and
      ii. be equipped with controllable rudder(s);
4. Fuels are limited to kerosene, diesel and/or propane unless approved in writing by AMA.
5. The fuel tanks shall be of rigid construction with consideration given to burst and puncture resistance. Consideration shall be given that non-metallic fuel lines may not be able to contact hot parts of the engine as installed. Bag style fuel cells are permitted under the following conditions:
   a. is a multi-layer fuel cell that is purpose built for the application and designed to be resistant to rips, tears, hardening and cracking from kerosene/jet fuel exposure.
   b. is mounted in such a way as to ensure no contact with rough surfaces capable of causing abrasion between the tank and any aircraft surface.
   c. is mounted away from or protected from heat exposure from the engine(s) and pipe(s).
   d. is filled with a pressure sensing fueling system to ensure the cell isn't over pressurized during fueling.
   e. NO plasma/IV bags are permitted.

6. The fuel system shall have two fuel shut-off provisions, one of which is manual, and the other one shall be remotely operated. An ECU-operated shutdown is compliant as a remote shut-off if it closes with loss of power.
7. All radios shall be equipped with fail-safe and ECUs shall be configured to shut down the engine within 2 seconds of fail-safe activation.
8. It is recommended that multiple engines equipped with propane start be segregated or partitioned to prevent cross-ignition of exhaust gases.
9. Enclosed engine installation shall be designed with attention to flow path ducting, integration of related equipment, and fire containment and suppression on startup.
10. Afterburners are prohibited. Other special controls such as water injection, thrust reversers, variable nozzles, etc. are acceptable only if engine manufacturer provided and supported by development testing and user training.
11. Any engine involved in a crash where high G loads were probable shall be examined and certified as safe to operate by a manufacturer approved service center before operating and flying again.
12. *Total weight, ready to fly with fuel, must not exceed 55 pounds.*

Flight Line Requirements

13. A "B/C"-rated or equivalent fire extinguisher shall be present for all engine starts. Water-based fire-fighting equipment shall be present on the field.
14. A phone shall be present at the site, along with the phone number of the closest fire department or 911, whichever has been determined to be most effective for emergency response.
15. For all organized events dedicated to turbine-powered models, a safety barrier shall be in place.
16. The pilot will exercise caution during ground operation such that the exhaust gases from the engine do not impinge on any flammable object. The use of blast deflectors in the startup area is recommended.
17. No turbine-powered fixed wing model will be flown after dark or in poor visibility conditions. A rotary-wing model may be flown after dark or in poor visibility conditions provided the model is equipped with an onboard illumination system providing the pilot with a continuous and clearly illuminated view of the model's attitude and orientation at all times.
18. Turbine powered aircraft will not be allowed in any speed or racing events.
19. All hand-launching of aircraft, with a flight weight under 7.5 pounds wet, will be no closer than 25 feet from any individual except for the pilot and the pilot's helper. It is recommended that the pilot utilizes the assistance of a helper to launch the model.
20. Turbine waiver qualification flights, maiden flights, or test flights following a major repair of the aircraft structure, propulsion system, or control system may not be performed during an event. These flights may be performed before or after the official event hours. Major repairs are those which substantially modify or repair portions of the model such that the result differs from the original form and/or installation. Replacement of parts with the same or equivalent parts is not considered a major repair.

Pilot Requirements

21. Any operation of a fixed-wing, turboprop, rotary-wing, or control-line aircraft powered by a turbine engine requires that the pilot of said aircraft has obtained an AMA turbine waiver specifically for that category of aircraft.
22. **Any turbine pilot under the age of 14 must have a spotter who is a turbine waiver holder and at least 18 years of age present throughout the entire flight process, including startup and cooldown.**
23. An AMA member is permitted to fly a turbine-powered model using the **student** transmitter of a buddy box as long as the **primary** transmitter is operated by an experienced turbine pilot.
24. An experienced turbine pilot is defined as a pilot who has completed 20 or more turbine flights during the preceding 24 months and who has a turbine waiver issued by AMA. For confirmation purposes, the pilot is required to keep a written log of all flights and will provide copies to AMA upon request. Experienced turbine pilots may:
    a. Provide turbine-powered model flight instruction (using a buddy box) to non-waiver holder AMA pilots;
    b. Conduct turbine waiver qualification flights and sign the turbine waiver application (AMA document 510d)
    c. Supervise the first five solo turbine flights of a newly-waivered turbine pilot.

25. Waivered pilots who do not meet this experience requirement can obtain/regain experienced status by performing the 20 or more turbine flights in the current 24-month continuous period; it is not necessary to reapply for a turbine waiver or re-perform a turbine waiver qualification flight.
26. All turbine waiver applicants should have accomplished at least 50 flights on a high-performance model as follows:
    a. Fixed wing and Turboprop: model should be capable of sustained speeds of 100 mph or higher;
    b. Rotary wing: model should have a 0.60 cubic inch displacement or larger, capable of 50 mph forward flight speeds and advanced aerobatics.
27. The applicant shall first have flown the turbine powered model on a buddy box with an experienced turbine pilot in control of the master transmitter. The experienced turbine pilot will assist the applicant with as many flights as necessary until satisfied that the applicant is prepared for the qualification flight (which is performed flying solo without buddy box assistance).

Turbine Waiver Qualification Flight Requirements

28. The applying pilot will successfully perform a turbine waiver qualification flight(s) consisting of all ground operation and flight skills as specified in AMA Turbine Waiver Application (AMA document 510d) under the supervision of two experienced turbine pilots, one of whom is a contest director. A designated helicopter contest director is required for rotary-wing applicants.
29. The qualification process may consist of multiple flights, all made on the same day. The final flight shall contain all of the flight skills specified in Section 2 (Flight Skills) of the AMA Turbine Waiver Application (AMA document 510d).
30. Prior to the qualification flight(s), the applicant must have completed a buddy box flight, of the model to be used in the qualification flight(s), under the supervision of one the experienced turbine pilots who will supervise the qualification flight(s).
31. The qualification flight(s) will be performed using a single-engine model meeting the category-specific requirements as follows:
    a. Fixed-wing: turbine-powered model equipped with:
        i. a controllable rudder(s); and
        ii. a steerable undercarriage suitable for a rolling takeoff and landing; and
        iii. either flaps/flaperons or a speed brake; and
        iv. be able to come to a controlled stop on command with the engine at idle on a level hard surface. Additionally, the model shall:
        v. have a minimum weight of at least 12 pounds (dry); OR
        vi. be an ARF specifically designed and produced by the manufacturer for turbine power or converted to turbine power using a conversion kit (including tailpipe) produced by the model's manufacturer. The model shall also comply with items i) through iv) above

        Note: A waiver for the fixed wing category automatically qualifies the waiver holder to fly turboprop aircraft.
    b. Rotary-wing: helicopter powered by a turbine or by a 0.60 cubic inch displacement (or larger) engine. Aircraft shall be capable of 50 mph forward flight speed.
    c. Fixed-wing Turboprop: turboprop-powered model capable of sustained speeds of 75 mph or higher. Pilots holding only the turboprop category waiver shall qualify separately for the fixed-wing waiver.
    d. Control line: model requiring a pull test of 55 pounds or more, as described in the current CL Scale Competition Rules.
32. As part of the qualification process, the applicant will demonstrate general knowledge of turbine operation and maintenance such as ECU configuration, fail-safe set-up, fire-fighting equipment, turbine lag management, etc. See AMA document 510d for a detailed list of qualification flight requirements.
33. Following the successful completion of the qualification test flight, the newly-waivered turbine pilot shall submit the completed/signed Turbine Waiver Application (AMA document 510d) to AMA Headquarters as proof of compliance with the above requirements.

34. The first five solo turbine flights following a successful turbine waiver qualification flight:
    a. Shall be supervised by an experienced turbine pilot who shall be instructed on how to perform an emergency shutdown of the turbine in flight from the pilot's transmitter and be empowered to shut the turbine down in flight in the event of a loss-of-control emergency.
    b. Airspeed shall be maintained under 175 mph.
    c. Turbine flights shall be limited to single turbine engine aircraft.
35. In case of extenuating circumstances preventing compliance with the current waiver application requirements, the applicant should submit a detailed written explanation to AMA Headquarters. The AMA Safety Committee will review the information supplied by the applicant. Any deviation from the current application process will require the majority vote of the AMA Safety Committee.

Waiver Suspension

36. The AMA, through action by the Executive Director or its President, may suspend an individual's turbine waiver at any time. The waiver holder shall be notified of the suspension in writing, including a summary of the basis of the suspension. A waiver suspension can be predicated on a written complaint by two AMA members.
37. Where a Contest Director at a sanctioned event believes a turbine waiver holder is operating in a reckless or dangerous manner, the CD shall supply a written report to the AMA describing the infraction(s) and shall disqualify the participant from further flights during the event.
38. A suspension shall be for periods in multiples of 30 days, up to one year. During the suspension period, a waiver holder may operate a turbine aircraft under the supervision of an experienced turbine pilot on a buddy box to improve skill level. Upon completion of the suspension period, the waiver holder will submit a letter, co-signed by an experienced turbine pilot, regarding reinstatement. Repeated suspensions may result in the removal of the waiver.

Waiver Removal

39. The turbine waiver holder who has had their waiver removed may appeal the removal within thirty (30) days of receipt of the removal. The appeal shall be accompanied by all documentation that the appellant believes supports his/her position.
40. The AMA Safety Committee will consider the appeal, including the written documentation supplied by the appellant, and conduct any investigation or hold any hearing it deems appropriate, although it need not hold any formal hearing.
41. The majority decision of the AMA Safety Committee is final and binding.
42. If there is no appeal or the appeal is denied, there will be a one-year waiting period required before applying for recertification. Recertification requires requalifying for the turbine waiver through the requirements listed herein.

NOTE

Since the majority of foreign contestants attending AMA sanction events would find it difficult to comply with the requirements of obtaining an AMA turbine waiver, the AMA Executive Council has approved the following provision effective January 1, 1997:

> "AMA will accept a letter from the National Aero Club stating that the pilot is qualified and experienced in operating a model powered by a turbine engine."

While foreign contestants don't have to obtain a turbine waiver they are still required to comply with the AMA Gas Turbine Program, except for items 20-32.

Any AMA member who resides in the United States and operates a turbine engine is required to obtain a waiver.