AMA
EXPERIMENTAL
RADIO CONTROL AIRCRAFT
PROGRAM REQUIREMENTS AND
INSPECTOR INFORMATION

~ General Information ~

- **Temporary Authorization Permit**
- **Permit to Fly**
- **Inspector Handbook/Guidelines**
- **Preflight Check List**
- **Inspector Application and Quiz**

For additional information, forms, or a list of inspectors access our website at www.modelaircraft.org. Select *Membership* and choose *AMA Documents* and review documents 520-B & 520-C or contact

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Approved by AMA Executive Council**, April 25, 2009 (**Changes are identified in bold)

EXPERIMENTAL RADIO CONTROLLED AIRCRAFT

1. General. All pertinent FCC regulations and AMA regulations shall be applicable. Individuals interested in qualifying an RC aircraft to be flown in this category must obtain an application form, and handbook/guidelines. Any aircraft must be certified airworthy through the issuance of a Permit to Fly from a current AMA Inspector, PRIOR to any demonstration, practice, or general flying.

    1.1 Definition: An Experimental Radio Controlled Aircraft is one that is produced under the strict guidelines and regulations set forth in these conditions as stated herein. Aircraft models considered experimental in design and concept shall weigh no less than 55 pounds nor exceed 100 pounds maximum, with fuel, ready to fly.

2. Model Requirements. To be eligible for entry into the Experimental Radio Controlled Aircraft classification, the model must meet the following specifications:

    2.1 Wing loading must not exceed 80 ounces per square foot of total wing area.
    2.2 There shall be no wing span limitation.
    2.3 There shall be no engine cubic inch displacement limitation.
    2.4 Aircraft powered by turbine engines are permitted as outlined in Appendix A
    2.5 Radio equipment must meet the AMA/FCC Guidelines.
    2.6 A dual battery system is required with a minimun of 3000 mah each. The use of an arrangement which insures the models continued control in the event of a single battery failure is necessary. The system should be arranged so that both batteries operate together and includes redundant wiring and switching to the receiver.
    2.7 A fail-safe system must be used to retard the throttle in the event of control interruption.
    2.8 All wiring harnesses must be made of suitably sized stranded wires (e.g. 22/24 AWG) that have minimal voltage drop. This is a requirement for all "Y" harnesses using two or more servos, the servo-nicad wiring, switch harnesses, and extension cables. The connectors used in these components will be sized to accommodate the larger wire gauge, NOT spliced into smaller gauge standard wires, or connectors.
    2.9[1] If the aircraft is built from a commercially available kit, all servos installed must meet or exceed the manufacturers' specified torque.

    A commercially available kit is defined as:
    - ***Any aircraft built or assembled from a set of parts, instructions, specifications and plans provided by a manufacturer that has been tested and subsequently made available to the public in kit form.***
    - ***Any aircraft built from <u>unaltered</u> commercially published plans, either by parts being cut by the modeler/builder, or from the purchase of a "parts kit" from a commercial "kit cutter".***

[1] **All model aircraft with a Permit to Fly issue date prior to April 25, 2009 are exempt from complying with these requirements and will be grandfathered under the program rules approved by the EC on December 18, 2008.**

- ***Proof of the manufacturer's servo recommendations should be required for the Temporary Authorization To Fly. In lieu of that, servo torque calculations should be submitted.***

If the aircraft is not built from a commercially available kit then minimum servo torque required for the primary flight control surfaces that control pitch, roll, and yaw need to be computed per the following formula. Exceeding this minimum is always recommended.

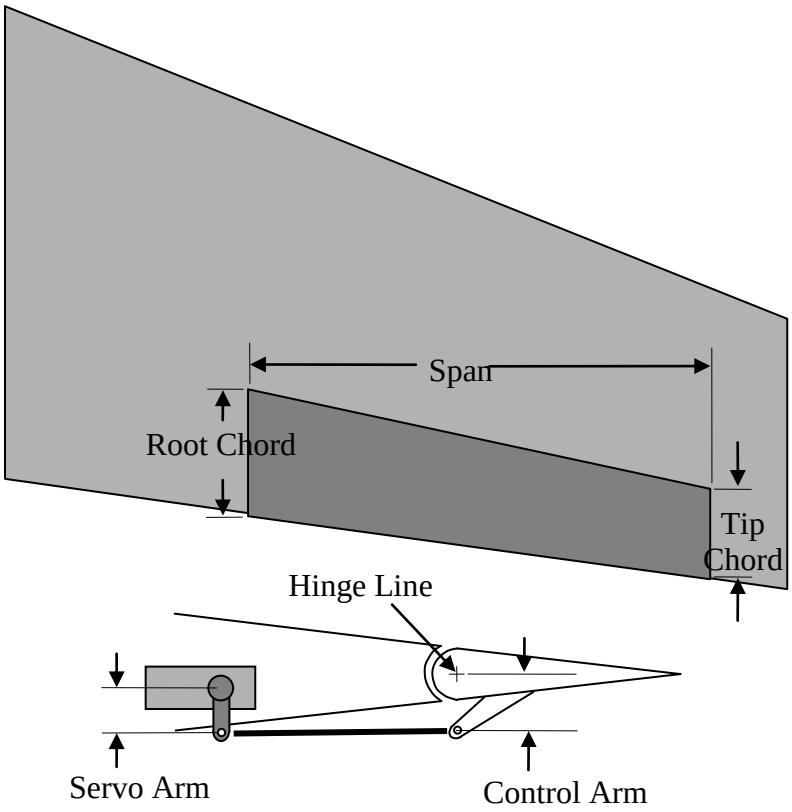
The minimum torque requirement is calculated using the following formula for a conventional control surface.

Minimum torque = A * Chord * Span * Chord/3 * Servo Arm/Control Arm
Where:

A =	**Airspeed factor (see table below)**
Chord =	average control surface chord (root chord + tip chord) / 2
Span =	control surface span
Servo Arm:	the distance from the center of the servo arm to the control linkage attachment.
Control Arm:	the distance from the hinge line to the control linkage attachment

All measurements are in inches, the minimum torque is in oz-in. The following sketch shows how the measurements are made.

Cut outs in control surfaces should be ignored, such as a clearance in an elevator to make room for rudder movement. The calculation should be made as if the clearance had not been made.



For a full flying control surface the minimum torque is calculated by the following method.

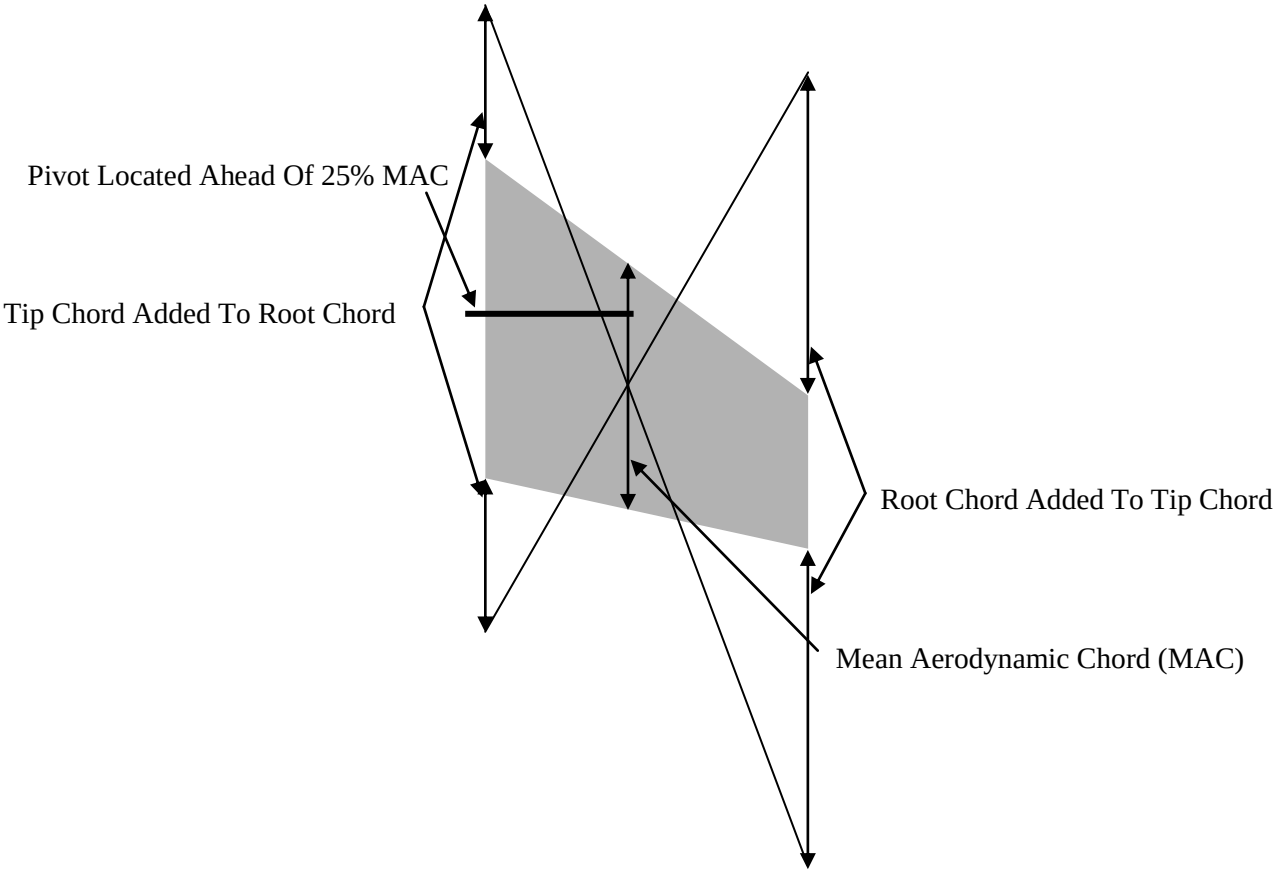
Minimum torque = A * Area * Servo Arm/Control Arm

Where:
A = **Airspeed factor (see table below)**
Area = planform area of the control surface

All measurements are in inches, area is in square inches, and the minimum torque is in oz-in.

The pivot point for the control surface must be located ahead of the quarter chord of the mean aerodynamic chord. A simple means to determine the mean aerodynamic chord is shown below.

Since the servo arm to control arm geometry is very important the builder should be certain that the proper control deflection can be achieved with the geometry described in the paper work supplied to the examiner. If at all possible the servo travel should be set to the maximum value available, and the control arm and servo arm chosen to achieve the desired control surface deflection.



Airspeed factor {A} for use in both conventional and full flying formulas.

- **Propeller aircraft whose flight regime will only include level flight, flat turns, gentle climbs and moderate dives: A = 1.25**
- **Propeller aircraft whose flight regime includes modest aerobatics, including loops, rolls, inverted flight and spins: A = 1.5**
- **Turbine aircraft whose flight regime will only include level flight, flat turns, gentle climbs and moderate dives and whose speed will not exceed 140 mph: A = 1.75**
- **Propeller aircraft whose flight regime includes unlimited aerobatics: A = 3.0**
- **Turbine aircraft whose flight regime includes unlimited aerobatics: A = 4.0**

- **Full flying control surfaces on aircraft whose speed is limited to 140 mph or less: A = 3.0**
- **Full flying control surfaces on aircraft whose speed exceeds 140 mph: A = 6.0**

2.10 An engine shut off system, operable from the transmitter; in addition to normal throttle-kill ability is required.

2.11 Engine noise must not exceed any standards established by the AMA or rules for the local flying site being used.

2.12 Dynamically balanced control surfaces are highly recommended to prevent flutter. The absence of flutter must be demonstrated at **the** time of certification by flight **through a representative sample of the normal maneuvers and speeds appropriate for the subject aircraft.**

Note
The use of redundant receivers is strongly recommended.

3. Permits to Fly

3.1 General

A *Permit to Fly* is required for each specific model aircraft before it is flown.

An AMA Appointed Inspector shall issue a *Temporary Authorization to Fly*, valid only on the day of issue, to allow test flights as described in 3.2 below.

3.2 Test Flights

3.2.1 All test flights shall take place:

(a) at a site deemed suitable by the Inspector for the purpose, so that any failures minimize endangering people or property, and
(b) in the presence of the Inspector, and
(c) while a *Temporary Authorization to Fly* is in force for the model.

3.2.2 The model shall then be flown to demonstrate its ability to perform safely, all the maneuvers contained in the nominated flight envelope. Specific requirements are:

(a) that no control surface flutter is apparent
(b) that deflection of each control surface during level flight at full throttle produces the correct response
(c) that the descent speeds can be controlled by use of the appropriate controls.

A minimum of two (2) qualifying test flights must be made in the Inspector's presence.

If for any reason the Inspector is not completely satisfied with the airworthiness of the model as demonstrated, the temporary permit is cancelled. Further test flights may be arranged after rectification of the faults noted.

Upon satisfactory completion of test flights the Inspector shall issue the *Permit to Fly*.

A *Permit to Fly* is issued by an appointed Inspector on behalf of AMA, when the requirements detailed in 3.3 below have been met.

A *suspended Permit to Fly* may be revalidated by an AMA Appointed Inspector once the aircraft has again met all requirements.

AMA headquarters must be notified immediately if a *Permit to Fly* is suspended or cancelled by an Inspector.

Possession of a valid *Permit to Fly* allows flights of the subject model by the owner, or by a competent pilot designated by the owner, both of whom must be current AMA members. Such flights are subject to all limitations applying to their location.

3.3 Requirements for the issue of a Permit to Fly

3.3.1 Application

The owner of the Experimental Radio Controlled Aircraft shall contact a designated inspector and make arrangements for inspection and test flights). A list of current inspectors is available in the PDF document section of AMA's website (http://www.modelaircraft.org/documents.aspx). Applicants may also request a hardcopy listing by contacting the Programs Department.

3.3.2 Flight Envelope

The applicant for a *Permit to Fly* shall define the flight envelope of the model. This definition will be used by the Inspectors in deciding the scope of test flights. The flight envelope shall be selected from the following:

(a) Level maneuvers, flat turns, gentle climbs and dives.
(b) looping maneuvers
(c) rolling maneuvers
(d) inverted flight
(e) spins
(f) snap maneuvers
(g) unrestricted aerobatics

3.3.3 Builder's Declaration

The builder of the model requesting a *Permit to Fly* will be required to sign a declaration that the materials and methods used in its construction are suitable for the intended purpose.

3.3.4 Issue of a *Temporary Authorization to Fly*
The Inspector shall examine the completed model aircraft immediately prior to the test flights, and shall issue a *Temporary Authorization to Fly*, provided that:

(a) the Builder's Declaration has been signed, and
(b) all identifying and radio equipment details on the Permit form are correct, and
(c) satisfactory completion of the Inspection Checklist.

3.4 Issue of a Permit to Fly

The inspector must be satisfied that model construction is well done and that the model meets all of the requirements of this Experimental Radio Controlled Aircraft Program. This may be accomplished by examination during construction or by a combination of examination prior to flight and subjection of the model to the extreme limts of its performance in flight demos.
The inspector shall endorse the *Permit to Fly* with the flight envelope tested, date of testing and signature. Copies of the endorsed *Temporary Authorization to Fly*, the completed pre-flight checklist and the completed *Permit to Fly* will be forwarded to AMA Headquarters by the Inspector. The copy of the *Permit to Fly* retained by the aircraft owner will serve as proof of inspection.

3.5 Operation under a Permit to Fly

3.5.1 Pre-Flight Inspection
The operator shall verify all items in the Inspection Checklist before the first flight on any one day, and after the model has been disassembled and reassembled. Items marked "*****" must also be verified again before EACH flight.

3.5.2 Suspension of Permit
A *Permit to Fly* shall be considered suspended whenever the model for which it is issued:

(a) suffers damage to its primary structure or any control surface
(b) suffers any control malfunction during flight
(c) is structurally or aerodynamically modified
(d) is fitted with a different type or size of engine or engine mount
(e) is fitted with a different type or size of servo operating a control surface
(f) is fitted with a different type of battery or a battery with a lower capacity
(g) is fitted with a different type of radio receiver
(h) is fitted with any device which alters the control system
(i) has any control surface re-covered or repainted so that its

unbalanced weight is increased
(j) is not routinely inspected before flight
(k) has not been flown during a period of twelve months
(l) is operated outside the flight envelope defined in its *Permit to Fly*
(m) undergoes a change of ownership

A *suspended Permit to Fly* may be revalidated as described in 3.7.2.

3.5.3 Cancellation of a *Permit to Fly*
A *Permit to Fly* shall be cancelled and AMA Headquarters notified by the owner, whenever the model is damaged beyond repair or if modified such that it is no longer accurately described in the *Permit to Fly*.

3.6 Inspectors

3.6.1 Assignment. AMA HQ will maintain a pool of prospective inspectors and post a listing on the AMA website. Individuals desiring to have an aircraft inspected can access the list of current inspectors on the AMA website at www.modelaircraft.org. Select *Membership Services* and choose *AMA Documents* from the drop-down menu. Document 520-B shows a complete listing and is updated periodically.

3.6.2 Nomination. Individuals desiring appointment to the inspector pool may do so by filing the appropriate application form with AMA Headquarters. Application involves the passing of a quiz on the program, references from three current Open AMA members, and the supplying of a resume designed to provide details of the individual's qualifications. A majority approval vote of the Safety Committee members will result in the addition of the individual to the inspector pool. Additional names may be added to the pool by the Safety Committee or Executive Council if needed, to adequately maintain the program.

3.6.3 Obligations of an Inspector
In accepting the nomination as an Inspector, a member accepts the responsibility implicit in the appointment and undertakes:

(a) to be available with reasonable notice to attend and observe test flights when requested,
(b) to carry out all duties in accordance with this manual,
(c) to not charge for services (compensation for expenses and travel are permissible),
(d) Inspector cannot be the builder, pilot, or owner of the aircraft inspected.

3.6.4 AMA's member insurance coverage applies to a certified Experimental Aircraft Inspector for alleged negligence resulting in a bodily injury or property damage

claim or suit arising out of the inspection of an airplane for the purpose of qualifying it for experimental flight approval.

3.7 Inspection Procedures

3.7.1 Inspection Before Test Flights
This inspection is to verify general airworthiness. All items in the Inspection Checklist must be examined by the inspector and marked not applicable or satisfactory before test flights commence.

3.7.2 Revalidation of a *Suspended Permit to Fly*

An Inspector may revalidate a *suspended Permit to Fly* provided the repairs and/or modifications causing the suspension have been examined and the model in its modified state is again test flown as deemed necessary by the Inspector.

If the *Permit to Fly* was suspended due to ownership change, the inspector may issue a new *Permit to Fly* with the information for the new owner. Model inspection and/or test flights are strongly recommended.

3.7.3 Appeals
In the event of unresolved disputes, the applicant for a *Permit to Fly* may appeal to the AMA Safety Committee for a ruling and, if unresolved, the AMA Executive Council shall be the final arbiter in all disputes.

4. Flying Sites (All sites must meet this standard)

The minimum distance between the take-off/landing path and the pilot line shall be 50 feet. All other flying, including practice flights, shall be performed at a minimum distance of 200 feet to any spectator, except during sanctioned events flown in accordance with the official AMA Competition Regulation scale rules. All other scale competition event rules must be submitted to AMA for approval. Possession of a valid Permit to Fly and completion of the Daily Inspection List is required in order to fly.

TEMPORARY AUTHORIZATION TO FLY

Description:

Type _____

Wingspan _____ Weight _____ Inspector Initials _____

Design by _____

Engine Details _____

Turbine Class I or II (if applicable) _____

Color Scheme _____

Construction _____

Radio Equipment (Manufacturer and Model Number) _____

Transmitter	_____	Rudder	_____
Receiver	_____	Throttle	_____
Servos	_____	Flaps	_____
Aileron	_____	Retracts	_____
Elevator	_____	Other	_____

Builder's Declaration

I certify that the materials, methods, and standards used in the construction of the above model aircraft are, to the best of my knowledge and belief, suitable for the intended purpose and are in accordance with the program requirements.

Name _____ Signature _____

Date _____

Pilot's Declaration

I certify that I have the appropriate experience and skill level required to operate this model.

Name _____ Signature _____

Date _____

THIS *TEMPORARY AUTHORIZATION TO FLY* IS VALID ONLY ON THIS DAY OF ISSUE UNLESS AUTHORIZED BY AN INSPECTION.

Date of Issue _____ Inspector _____

Signature _____

NOTE: Original to owner, duplicate to AMA HQ

PERMIT TO FLY

Ownership Details:

Name _____ AMA No. _____

Address _____

_____

Telephone (_____) _____

Model Description _____

Flight Envelope:	*Inspector's Signature*
Level flight, flat turns, gentle climbs and dives	_____
Looping maneuvers	_____
Rolling maneuvers	_____
Inverted flight	_____
Spins	_____
Unrestricted aerobatics	_____

Designated Pilot(s): _____

_____

Owner's Declaration:

I certify that the above described aircraft has been inspected for airworthiness and has demonstrated its ability to perform within the above flight envelope as prescribed in the AMA Procedures.

The aircraft will be operated only within the flight envelope certified by the Inspector and only by the designated pilot(s) listed on this Permit.

Inspector _____

Signature _____

Date _____

NOTE: Original to owner, duplicate to AMA HQ

PERMIT TO FLY – EXPERIMENTAL TURBINE POWERED CLASS ADDENDUM

Model: _____

Experimental Turbine Class I ❒ Experimental Turbine Class II ❒

Owner's Declaration
I authorize the following individual(s) to operate the model in accordance with the program requirements. I have verified that the named individual(s) has the experience and skill level required to operate the model.

Name _____ AMA _____

Signature _____ Date _____

Pilot's Declaration
I am currently a member in good standing and have a current turbine waiver/affidavit on file with the Academy of Model Aeronautics. In addition, I certify that I have the minimum qualifications necessary to operate this model in accordance with the program requirements (see Appendix A).

(1) Pilot's Name _____ AMA _____

Signature _____ Waiver _____

(2) Pilot's Name _____ AMA _____

Signature _____ Waiver _____

NOTE: Original to owner, duplicate to AMA HQ

HANDBOOK—GUIDELINES FOR APPOINTED AIRCRAFT INSPECTORS

No one can predict equipment failure or pilot error in the flying of radio controlled aircraft. However, if the following preliminary precautions are met, equipment and structural failures can be minimized.

As an appointed Safety and Equipment Inspector, your responsibility is to scrutinize EVERY aspect of the aircraft awaiting certification.

The following is considered the criteria for certification of Experimental Radio Controlled Aircraft:

Check List for Preflight Inspection

1. UN-ASSEMBLED INSPECTION

1.1 WING GROUP

( ) Fuselage attachment points
( ) Strut attachment points
( ) Rigging wire attachment points
( ) Servo mounting
( ) Pushrods/cables and actuating links
( ) Control horns
( ) Control surface hinges and area around hinges
( ) Undercarriage integrity and attachment points
( ) Structural integrity overall
( ) Covering integrity

1.2 FUSELAGE GROUP

( ) Wing attachment points
( ) Undercarriage integrity and attachment points
( ) Servo mounting
( ) Pushrods/cables and actuating links
( ) Control horns
( ) Control surface hinges and area around hinges
( ) Fin and rudder assembly
( ) Horizontal stabilizer assembly
( ) Bracing/strut attachment points
( ) Structural integrity overall
( ) Covering integrity

1.3 ENGINE(S)

*( ) Propeller secure and undamaged
*( ) Spinner secure and clear of propeller blades

*( ) Engine mounting and accessories secure
*( ) Cowling attachment
*( ) Magneto switch functioning and OFF
*( ) External servicing points (fuel, plus, etc.)

1.4 RADIO EQUIPMENT

( ) Receiver installation
( ) Battery installation
( ) Antenna installation
( ) Switch installation
( ) Wiring and plugs clean, undamaged and secure

2. ASSEMBLED INSPECTION

2.1 GENERAL

( ) First ensure that all components fit together correctly, and that no undue strain is needed to achieve proper alignment.

2.2 RIGHT WING

( ) No non-design twists or warps
( ) Wing tips true
( ) Wing leading edge
( ) Struts and rigging secure
( ) Attachment to fuselage
( ) Undercarriage attachment
( ) Alignment of control surfaces

2.3 FUSELAGE AND TAIL GROUP

( ) Horizontal stabilizer attachment
( ) Fin and rudder attachment
( ) Struts and bracing secure
( ) Alignment of tail group with respect to wing
( ) Alignment of control surfaces
( ) Tail wheel assembly
( ) Canopy

2.4 LEFT WING

( ) No non-design twists or warps
( ) Wing tips true
( ) Wing leading edge
( ) Struts and rigging secure
( ) Attachment to fuselage
( ) Undercarriage attachment
( ) Alignment of control surfaces

2.5 MISCELLANEOUS

( ) Center of gravity
*( ) Correct movement and centering of all control surfaces
*( ) Battery charge, fuel, air pressure all sufficient

2.6 CHECKS WITH ENGINE(S) RUNNING

*( ) Aircraft secure before start (tied down preferred)
*( ) Engine performance and reliability
*( ) Propeller and spinner balance
*( ) Minimal aircraft vibration
*( ) Radio reliability
*( ) Radio range check

THE ABOVE CHECK LIST IS TO BE COMPLETED BY AN APPOINTED INSPECTOR PRIOR TO TEST FLIGHTS. ALL ITEMS ARE TO BE MARKED "N/A" IF NOT APPLICABLE, CHECKED IF PASSED, OR LEFT BLANK PENDING RE-INSPECTION IF FAILED.

The Check List is subsequently used by the operator of the aircraft:

(a) Once at the beginning of a flying session (all items)
(b) Before every flight (items marked with an * only)

PREFLIGHT CHECKOUT TEST
(Should be completed prior to each flight)

CONTROL SYSTEM:

( ) Determine ground range with transmitter antenna collapsed and ONE conventional servo (standard wire length) plugged into receiver.

( ) Perform a range check with your radio. Use the recommended range check distances as described by the radio manufacturer as a minimum test range requirement. Perform the range check, without the engine operating, to the maximum range achievable without control degradation.

( ) Run a similar check with the engine operating at power levels from idle to maximum power. If there is range degradation with an operating engine there is an issue with ignition noise and/or a vibration induced problem. Do not fly until this is resolved. ANY reduction in range means a loss in signal/noise ratio and a chance of control loss in flight.

The engine off/engine on test should be conducted prior to each flying session since degradation of shielding and spark plugs with usage is a historical fact.

( ) Check servo operating for erratic performance, especially with the engine(s) operating. Be sure they operate smoothly throughout the entire control range. Apply hand load to surfaces while being moved by transmitter action to check for non-flexing of control cables/rods.

( ) Check the output of the control transmitter, preferably with an independent field-strength meter. Perform this check before each flight. Transmitter battery life MUST have been previously established by a discharge test, prior to first flight.

( ) Keep a daily record of transmitted "ON" time.

( ) Check the state of charge of the flight battery packs, UNDER LOAD, just prior to each flight. Flight battery packs MUST have been previously checked for design capacity prior to first flight.

( ) Check the function of the fail-safe system by turning off the transmitter and observing the results.

VEHICLE:

Thoroughly inspect the aircraft and components for assembly and for structural integrity.

( ) Inspect the wing and tail assembly for signs of structural failure.
( ) Examine all control surface hinging for design integrity.

( ) Examine servo mounting and retention screws or bolts.

( ) Examine all push rods and keepers.

( ) Be SURE there is no looseness or slop in the control components.

( ) Check the mounting provision for tightness and security of all components that are removable for transporting to and from the flying site.

( ) Inspect fuselage for signs of potential failure or damage during previous flights or transporting.

( ) Check servo installation and be sure the servo arm retention screws are tight.

( ) Inspect receiver/servo wiring for integrity and see that all plugs connecting the components are taped or in some way protected from vibrating apart. Include battery pack plugs.

( ) Check to see that receiver antenna(s) are routed away from servos and directly away from the receiver area. (Vertical orientation of antenna is preferred for best performance)

( ) Check for NO STRAIN on antenna/receiver connection.

( ) Examine landing gear mounting and function. (retract/steering)

( ) Examine fuel tank(s) installation for adequate support, isolation from vibration and ZERO leakage. Special care must be given to gasoline systems in view of the increased fire hazards involved.

ENGINES:

( ) Inspect mounting for looseness, cracks or evidence of degradation.

( ) Check for loose bolts, muffler looseness, routing and integrity of ignition wiring, etc.

( ) Check propeller(s) and installation for tightness. Propellers must have the edges rounded to prevent hand cuts on starting. Always use a glove or engine starter.

( ) Check spinner(s) for tightness or cracks. (Loss of a spinner and/or propeller in flight can quickly generate a panic situation)

( ) Inspect cowl area for loose nuts and bolts.

ENGINE RUN-UPS:

( ) Exercise extreme caution when starting and operating engines. A starter is preferred to avoid hazards to the hands or body.

Securely restrain the vehicle. Do not allow ANYONE to be positioned in the plane of rotation of the propeller(s).

The use of safety glasses is encouraged. Avoid loose clothing, transmitter straps, etc. that might engage the propeller.

( ) Always have a FIRE EXTINGUISHER available when operating gasoline engines.

( ) Start the engine(s) and check for proper idle.

( ) Be sure that the engine(s) operates at desired top end R.P.M. and does not sag with prolonged running, from inadequate cooling.

PILOT STANDARDS:

The inspector will review the pilot's skill level at the same time as the model's qualification flight.

Safe operation is a mixture of several ingredients: design, construction, pre-flight check-out and the pilot. A proficient pilot can often avoid a disaster when power failure, partial loss of control or many other incidents occur. A large, heavy model does not fly like a 1/4 size "J-3 Cub" and can be much less forgiving of the piloting technique. The larger the aircraft is, the more it will fly like a full-scale aircraft than smaller models. Control and engine(s) response are quite different from smaller aircraft.

The following constitutes the standards for pilots of aircraft in the EXPERIMENTAL CLASS:

( ) At least five years background in model design, construction, and/or piloting of radio controlled model aircraft.

( ) Has demonstrated successful flying experience of LARGE heavy models in excess of 40 pounds.

( ) A demonstrated ability to recognize stall and loss of aerodynamic control.

20/20 eyesight for vision (corrected), and sobriety are a must for safe flight operations. Full scale piloting experience is desired.

FLIGHT:

The vehicle shall be flown AWAY from property and people at anytime. (Other than landing and take-off). It must occupy airspace that will permit safe impact on loss of control. This infers function of the fail-safe system to a limited dispersion impact. Passes shall not be made in the direction of property or people.
Flight maneuvers shall not exceed the design limits of the vehicle.
Flight velocity shall not exceed 120 mph in level flight.

The flight test program should include the following items during the initial two shake down flights, PRIOR to certification:

( ) First flights shall be relatively short in duration and be devoted to checking out the "trim" of the aircraft. This should include slow flight and stall characteristics to assist the pilot with first landings. Control limits, roll rates, climb rates and glide rates should also be included.

( ) Later flights during testing must be designed to demonstrate control and structural integrity. A little tighter than normal left and right hand turns (in case it may be needed), and a power dive, enough to add a little extra stress to check-out structural integrity. If the original aircraft was capable of aerobatics (and they are to be part of the flight demo), then inverted flight, spins, etc. should be included.

( ) The final test flight conducted for the Inspector shall demonstrate the entire flight envelope as might be flown at sanctioned event demonstrations.

( ) The appointed AMA Inspector will issue certification *(Permit to Fly)* to the owner and copy to the Programs Department at AMA Headquarters, showing that the aircraft is airworthy. If the pilot is other than the owner, this must be also noted on the certificate.

( ) Authorization must be renewed ANNUALLY. This will require the same pre-flight inspection, and two check-out flights of 8 to 10 minutes duration.

Please submit a copy of the completed pre-flight checklist,
along with the *Permit to Fly,* to AMA.

APPENDIX A

EXPERIMENTAL TURBINE POWERED CLASS

An Experimental Turbine Powered Class model shall be a model that has a flight weight, with full fuel tanks, of no more than 75 lbs.

GENERAL

All regulations from the Experimental Class (AMA website document 520-A) shall be followed unless stated differently here. The regulations stated here are not all inclusive, but only what is required in addition to, or in place of, the Experimental Class regulations.

All AMA turbine regulation (AMA website document 510-A) shall be followed in the Experimental Turbine Class**,** unless otherwise specified in this appendix.

The maximum thrust to weight ratio shall be 1:1 (fueled).

Both aircraft and pilot shall be qualified for either Experimental Turbine Class I, or Experimental Turbine Class II.

An Experimental Turbine Class I model is restricted to a maximum speed of 200 mph.

An Experimental Turbine Class II model is restricted to a maximum speed of 140 mph.

To qualify for an Experimental Turbine Class I waiver the pilot shall have completed a minimum of 100 turbine powered flights with a model having a dry weight of 25 pounds or greater, and being capable of speeds greater than 170 mph.

To qualify for an Experimental Turbine Class II waiver the pilot shall have completed a minimum of 50 turbine powered flights with a model having a dry weight of 25 pounds or greater.

A class I pilot may operate either a class I or a class II model.

The builder/owner may name two test pilots, whose experience meets the requirements of the appropriate class, to operate the model. Once the model has completed its qualification flights, a test pilot may use a buddy box system to transition the owner/builder to the model.

The builder of the model shall have completely constructed two or more turbine powered models having a dry weight of 25 pounds or greater. Completely constructed meaning built from scratch or from a factory kit.

AIRFRAME INSPECTION

The inspector shall verify that all flight surfaces (wings and tails) are reasonably stiff and solidly attached to the fuselage. With the fuselage held in place (by hand or mechanically) the inspector should hand load the wing from the tip, applying both vertical loads, up and down, and twisting loads, leading edge up and down. The intent is not to determine the ultimate strength of the model, but that under moderate loads there are no unexpected motions, and that there is no evidence of failing joints. The tails shall be tested in the same manner.

The fuselage should also have reasonable stiffness. The tails will be loaded by hand in such a manner as to bend and twist the fuselage. The inspector should be looking for any unexpected motion or evidence of failing joints.

All control surfaces will be pull-tested to insure that the hinges are secure. With the radio turned on, the inspector will verify that there is no excessive flexing of the control linkage or movement of the servo beyond what the vibration isolators permit.

Once the inspector has verified that both the airframe and the pilot meet the requirements, a Temporary Authorization to Fly will be issued. On the flight day, prior to fueling, the model shall be weighed. The inspector will either provide the scales, or take reasonable effort to check the accuracy of the scales used.

While in test flights the model will be operated as close as practical to the center of the field and initially at moderate speed. Once the pilot is comfortable with the model he shall begin to expand the operating envelope of the model. The initial envelope expansion is to prove load carrying capability and flutter resistance at higher speeds. The pilot will slowly increase the speed of the model and pull progressively tighter turns at field center. The model shall always be turned away from the runway during these maneuvers. Once the inspector is confident that the model has operated up to a reasonable condition successfully the pilot shall begin working to the nominated flight envelope in order to complete the qualifying test flights.

AIRFRAME REQUIREMENTS

All flight control servos shall have a minimum torque as determined by the method outlined in **item 2.9.** The builder/owner shall provide a copy of the calculations for each control surface to the inspector. Flaps may be excluded if it can be shown that the servo cannot be back driven with the surface in the up position. An example of this would be a servo that is rigged such that the control linkage is in line with the servo output shaft with the flap up.

All control linkages shall have a positive lock that prevents the clevis, or similar device, from coming loose under load.

Wing loading shall not exceed 100 ounces per square foot of wing area.

The battery supplying flight control servo power shall have a minimum size of 1000 mah + 250 mah per flight control servo.

APPENDIX B

FOREIGN PARTICIPANTS – EVENT PERMIT TO FLY

Since the majority of foreign participants attending AMA sanctioned events would find it difficult to comply with the requirements of obtaining a Permit to Fly, the AMA Executive Council has approved the following provision, effective December 18, 2008:

1. Any foreign participant must be an Affiliate AMA member.[1] This requirement also applies to current MAAC members who wish to apply for an event permit and their aircraft is between 77 and 100 pounds. This is due to discrepancies between the AMA and MAAC safety codes and liability policies.

2. Pilots/Owner must sign an attestation that the aircraft has flown a minimum of three successful flights on previous occasions.

3. An AMA Experimental Inspector will conduct an inspection per the Experimental Program guidelines.

The AMA Experimental Inspector will issue an "Event Permit" based on the pilot's attestation and a successful inspection. The issued permit will allow the aircraft to be immediately flown at any time during the sanctioned event and AMA's liability coverage would apply.

An "Event Permit" is required for each specific model aircraft, and is only valid for the dates of the sanctioned event.

[1]Foreign participants must be a current member of their National Aero Club in order to sign up as an AMA Affiliate member.

SANCTIONED EVENT PERMIT TO FLY

Ownership Details:

Name _____ AMA No. _____

Address _____

_____

Model Description:

Type _____

Wingspan _____ Weight _____ Inspector Initials _____

Design by _____

Engine Details_____

Turbine Class I or II (if applicable) _____

Color Scheme _____

Construction _____

Where applicable, provide manufacturer's name and model number

Radio Equipment _____

Transmitter	_____	Rudder	_____
Receiver	_____	Throttle	_____
Servos	_____	Flaps	_____
Aileron	_____	Retracts	_____
Elevator	_____	Other	_____

Designated Pilot(s): _____ AMA# _____

_____ AMA # _____

The aircraft will be operated only within the flight envelope certified by the Inspector and only by the designated pilot(s) listed on this permit.

Inspector _____ AMA #_____

Signature _____

Issue Date _____ Expiration Date _____

EVENT PERMIT TO FLY - ATTESTATION

Owner/Pilot Attestation:

I, _____, hereby attest that the model aircraft,

_____ _____
Model Description

has had a minimum of three (3) successful flights on previous occasions and that it complies with the current AMA Experimental Aircraft program guidelines.

Owner's Name _____

Signature _____

Date _____

APPLICATION FOR EXPERIMENTAL RADIO CONTROLLED AIRCRAFT INSPECTOR

The Academy of Model Aeronautics (AMA) maintains a pool of potential inspectors for the Authorization Procedure for Experimental Radio Controlled Aircraft. This procedure is designed to provide insurance for individuals wishing to fly model aircraft between 55 and 100 pounds in specific, controlled situations. Individuals desiring to be considered for assignment, as an inspector must submit this completed form to the Programs Department at AMA Headquarters. The AMA Safety Committee will make appointment to the inspector pool.

Inspectors are required to provide a detailed resume and complete a questionnaire based on the following documents, (1) *Official AMA National Model Aircraft Safety Code, (2) Frequency Information (Membership Manual), and (3) AMA Experimental Radio Control Aircraft Program Requirements and Inspector Information.* Responsibilities shall include the complete administration of the Authorization Procedures as detailed in the Program Requirements. Special consideration shall be given to site selection and requirements as well as appropriate weather conditions for the authorization flights. In all cases the aircraft shall not be considered authorized for flying until all applicable forms are properly completed and signed.

Name _____ AMA # _____

Address _____

City _____ State _____ Zip _____

Phone (_____) _____ - days (_____) _____ - evenings

E-mail _____ Fax _____

Number of Years as AMA member _____

Occupation _____

I pledge that if I am granted Experimental Radio Controlled Inspector status, I will:

- ♦ Maintain a high level of proficiency in the use of materials as well as building and flying techniques for large aircraft models.
- ♦ Maintain strict safety standards and adherence to the AMA Safety Code, the AMA Experimental Radio Control Aircraft Program Requirements and Inspector Information and its Authorization documents.
- ♦ Submit all required documentation promptly.

Signature _____ Date _____

The following information constitutes as a resume of those qualities and skills I possess to enable me to serve as an Inspector for Experimental Radio Controlled Aircraft.

(It is imperative that you include items such as years of modeling experience involving flying and design in the discipline of radio control; full scale experience including type of license held, if any, as well as any background in home building such as EAA activity; number of years experience as a Contest Director, if any, and major event(s) administered; background in radio, if any; ability to travel to administer authorization procedures; articles published; administrative positions held; other items pertinent to being selected for position. Please be as specific as possible. This information is crucial for the Safety Committee to evaluate your application.)

Resume (Qualities, Skills, and Background)

REFERENCES

(To be completed by three (3) individuals who are current AMA Open Members)

We, the undersigned, consider the applicant fully qualified to act on behalf of the AMA as an Experimental Radio Controlled Aircraft Inspector.

Name (please print) _____ AMA # _____

Address _____

City _____ State _____ Zip _____

Signature _____ Date _____

Name (please print) _____ AMA # _____

Address _____

City _____ State _____ Zip _____

Signature _____ Date _____

Name (please print) _____ AMA # _____

Address _____

City _____ State _____ Zip _____

Signature _____ Date _____

EXPERIMENTAL RADIO CONTROLLED AIRCRAFT INSPECTOR QUIZ

Name _____ AMA # _____

Address_____ Date _____

City, State, Zip _____

In qualifying as an inspector for experimental radio controlled aircraft, an individual assumes a high level of responsibility. The following questionnaire is designed to test the applicant's understanding of the process for certifying models in this classification. The information required may be found in the AMA Membership Manual (Safety Code and Frequency Information), or the documents associated with the AMA Experimental Radio Control Aircraft Programs Requirement and Inspector Information publication.

Read each statement and locate the page and/or item number that provides information about each statement. Fill in the proper numbers in the spaces on this form. A minimum grade of 83% is required for passing. (Membership Manual is available on our website at www.modelaircraft.org under "Membership.")

Document# 1 = Safety Code
Document# 2 = Frequency Information – current Membership Manual
Document# 3 = Experimental Radio Control Aircraft Programs Requirement and Inspector Information booklet

1. Page ____ Item ____ Document #_____ — At all flying sites a safety line or lines must be established, in front of which all flying takes place

2. Page ____ Item ____ Document #_____ — The inspector issues temporary authorization to fly, valid only on the day of issue, to allow test flights.

3. Page ____ Item ____ Document #_____ — A minimum of two (2) test flights must be made in the presence of the inspector.

4. Page ____ Item ____ Document #_____ — A minimum distance of two hundred (200) feet shall be required separating the pilot line and the aircraft's flight path.

5. Page ____ Item ____ Document #_____ — 53.1 MHz through 53.8 MHz are legal frequencies for radio control events, providing the modeler is properly FCC licensed

6. Page ____ Item ____ I will not fly my model aircraft unless it is identified with my name and address, or AMA number, inside or affixed to the outside of the model aircraft.
   Document #_____

7. Page ____ Item ____ A maximum wing loading requirement is provided.
   Document #_____

8. Page ____ Item _____ Authorization for flights must be renewed annually.
   Document #_____

9. Page ____ Item ____ The inspector cannot be the builder of the aircraft.
   Document #_____

10. Page ____ Item ____ Flight velocity shall not exceed 120 mph
    Document #_____

11. Page ____ Item ____ AMA shall be the final arbiter in all unresolved disputes.
    Document #_____

FOR AMA HQ USE ONLY

Score _____ % Passed ☐

Needs to resubmit ☐