



# 520-A RADIO CONTROL LARGE MODEL AIRPLANE PROGRAM

Approved by AMA Executive Council, October 28, 2017, updated 9/28/2023

## Contents

- Legislative requirement for LMA aircraft : ..... 2
- Required Forms and Photos..... 3
- Engine Limitations ..... 5
- Batteries ..... 6
- A commercially available kit is defined as: ..... 6
- LTMA Speed Limitations ..... 7
- LTMA Pilot Qualifications ..... 7
- LMA Permit Regulations ..... 7
- LMA/LTMA Permitting Requirements ..... 8
- Form 1: Temporary Authorization to Fly for all LMA and LTMA..... 11
- Form 2: Permit to Fly for all Large Model Airplane Classes ..... 12
- Form 3: Builder’s Declaration ..... 13
- Form 4: Turbine Class Permit to Fly Addendum ..... 14
- Form 5: Checklist for Preflight Inspection ..... 15
- Table 2.1 ..... 20
- Form 6: Sanctioned Event Permit to Fly for Foreign Participants..... 25
- Form 7: Event Permit to Fly – Foreign Participant Attestation ..... 26
- Form 8: Inspector Application ..... 31

**OVERVIEW:**

If you are interested in flying airplanes that weigh more than 55 pounds and up to 125 pounds, this is the program for you!

AMA has worked with many modelers throughout the years to create a safe way to operate large model airplanes. The process requires the airplane to be inspected, then test-flown in front of credentialed AMA members. After the process has been completed, you can fly the airplane at AMA Chartered Club flying sites and AMA Sanctioned Events.

**Legislative requirement for LMA aircraft :**

Unmanned aircraft weighing more than 55 pounds.--

A person may operate an unmanned aircraft weighing more than 55 pounds, including the weight of anything attached to or carried by the aircraft, under subsection if--

(A) the unmanned aircraft complies with standards and limitations developed by a community-based organization and approved by the Administrator; and

(B) the aircraft is operated from a fixed site as described in FAA section 349, paragraph C, Section 1 & 2.

## Required Forms and Photos

**These items are required to be completed and returned to AMA Headquarters Safety Department to register a new, expired, repaired, or modified airplane.**

- Form 1: Temporary Authorization to Fly
- Form 2: Permit to Fly
- Form 3: Builder's Declaration
- Form 4: Turbine Class Permit to Fly Addendum\*
- Form 5: Preflight Inspection Checklist
- Three-view Photos of the Aircraft (front, side, and top)
- Payment Form completed

\*Only required if the airplane is Gas Turbine powered.

**For renewals of an already registered airplane that has not expired, or new ownership of an airplane, the following documents must be completed and returned to AMA Headquarters Safety Department.**

Form 2: Permit to Fly

Form 5: Preflight Inspection Checklist

Please email the documents to: [safety@modelaircraft.org](mailto:safety@modelaircraft.org), or mail to:

The Academy of Model Aeronautics, Attn: Safety  
5161 E. Memorial Dr.  
Muncie IN 47302

## SECTION 1: General Information

Large Model Airplanes (LMA) are classified as shown in Table 1.1:

Large Model Airplane Classification	Weight Criteria
Large Model Airplane 1 (FORM 1)	55 pounds (25 kilograms) to 77 pounds, 2 ounces (35 kilograms), with fuel, ready to fly
Large Turbine Model Airplane 1 (LTMA-1)	
Large Model Airplane 2 (LMA-2)	77 pounds, 3 ounces (35 kilograms) to 125 pounds (56.7 kilograms) with fuel, ready to fly
Large Turbine Model Airplane 2 (LTMA-2)	77 pounds, 3 ounces (35 kilograms) to 100 pounds (45.4 kilograms) with fuel, ready to fly

Table 1.1

### Timeline:

- Step 1: Model is inspected by Owner (if LMA-1 or LTMA-1) or Large Model Airplane Inspector (if LMA-2 or LTMA-2) and document Form 1 is filled out. This gives the owner/pilot approval for the test flight(s) on the specific date on the form. After test flight(s) are completed, go to Step 2.
- Step 2: Form 2 is completed, and the flight envelope is agreed upon by the model owner/pilot and observers. After the flight(s) is completed successfully, the form is signed, initialed, and dated by the observers. **Be sure to initial the line after the weight of the model!** This is a verification that the model has been weighed with fuel and the correct weight is on the form. **Note that the date must match that on form 1.**
- Step 3: The pilot must complete forms 3, 4 (if applicable), and 5.
- Step 4: The owner must take three pictures of the model to provide to AMA Headquarters.
- Step 5: The owner must assemble all documents (see list below) and forward them to AMA Headquarters by email or US Postal Service *within 30 days of the date on form 1. Be sure to include payment if sent by US Postal Service.*

*The owner may continue to fly the aircraft for 30 days from the date on form 1. After AMA receives and processes the documents, the owner will be sent a Receipt of Acknowledgment for his or her records. The registration is good for 3 years from the date on form 1. The owner should keep a copy of both the Receipt of Acknowledgment and form 2 with him or her to show proof that the airplane has been registered with AMA and can be flown past the 30-day timeline on Form 2. Beginning January 1, 2020,*

AMA will be sending the owner a Large Model Airplane Program card for each airplane registered. These will be used as proof to any AMA member, club officer, Contest Director, or Event Manager that the airplane on the card is legal to fly up until the expiration date on the card. Please show this card to the Contest Director or Event Manager of any AMA Sanctioned Event in which you plan to fly this airplane.

*If all the documentation is not provided to AMA within the 30-day allotted timeline, the application will be denied, and the airplane will be grounded. The owner will be required to restart the process and resubmit all paperwork again within 30 days.*

- 1) All pertinent regulations from government entities and the AMA shall be applicable.
- 2) Any LMA must be certified airworthy through the issuance of a Permit to Fly prior to flying.
- 3) All LTMA's are also subject to the rules and specifications outlined in the AMA's Turbine Regulations, unless specifically modified in the LTMA regulations.
- 4) General information for inspectors and details on the inspection process can be found in Section 3, Inspectors.
- 5) Additional guidance and regulations pertaining to foreign participants can be found in Section 4, Foreign Participants.
- 6) A chart relating AMA LMA and LTMA regulations to the larger scope of national airspace, SUAS registration, foreign participant requirements, and insurance coverage is available in the Document section of the AMA website, document 540-F.

#### LMA and LTMA Model Speed and Pilot Requirements

Wing loading must not exceed 80 ounces per square foot of total wing area, except for turbine-powered models, whose wing loading shall not exceed 100 ounces per square foot of total wing area.

There shall be no wingspan limitation.

#### **Engine Limitations**

There shall be no engine cu. in. displacement limitation for LMA-1 1 and LMA-2 class airplane.

The maximum installed static thrust for the LTMA-1 class is limited to the airplane's weight, ready to fly with fuel, plus 5 pounds, or 75 pounds, whichever is less.

The maximum installed static thrust for the LTMA-2 class is limited to the airplane's weight, ready to fly, plus 5 pounds, or 90 pounds, whichever is less.

For LTMA airplane, the engine(s) thrust shall be verified by either the manufacturer's published thrust to rpm numbers or by actual measurements.

## **Batteries**

A dual battery system is required. Either one of the two battery packs shall have adequate capacity to safely fly the airplane at least three full flights from receiver turn-on to turn-off. For sailplanes/gliders, a dual battery system sufficient to power the model for a minimum of one (1) hour of operation is required.

For powered models, a fail-safe system must be used to retard the throttle in the event of control interruption. For sailplanes/gliders, a failsafe setting must be used that fully deploys the normal landing mode settings.

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

All wiring harnesses must be made of suitably sized stranded wires (e.g., 22/24 AWG). The receiver will be located such that wiring runs are minimized. The connectors used in these components will be sized to accommodate the larger wire gauge, and *not* spliced into smaller-gauge standard wires or connectors.

Dynamically balancing control surfaces and sealing hinge line gaps 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 model airplane.

Self-launching sailplanes must conform to the powered LMA requirements, whether propeller or turbine powered, for the appropriate power type and weight classes.

Servo Torque Requirements (See Section 2, Supplemental Information, if applicable.)

If the model airplane is built from a commercially available kit, all servos installed must meet or exceed the kit manufacturers' specified torque.

### **A commercially available kit is defined as:**

- Any LMA built or assembled from a set of parts, instructions, specifications, and plans that has been tested and subsequently made available to the public in kit form provided by a manufacturer.
- Any LMA built from unaltered 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."

Proof of the manufacturer's servo recommendation is required for the Temporary Authorization to Fly. In lieu of that, servo torque calculations must be submitted. If the airplane 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 formula found in Section 2, Supplemental Information. Exceeding this minimum is always recommended. All model airplanes with a Permit to Fly issue date before April 25, 2009 are exempt from complying with these requirements and will be grandfathered under the program

rule approved by the EC on December 18, 2008.

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

#### **LTMA Speed Limitations**

- An LTMA-1 model is restricted to a maximum speed of 200 mph.
- An LTMA-2 model is restricted to a maximum speed of 170 mph.

#### **LTMA Pilot Qualifications**

To qualify for an LTMA-1 class, the pilot shall have completed a minimum of 50 turbine-powered flights with a model having a dry weight of 25 pounds or greater.

To qualify for an LTMA-2 class 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 140 mph.

#### **LMA Permit Regulations**

- 1) Test-flight permit requirements:
  - a) A *Temporary Authorization to Fly* is required for test flights. This authorization is only valid on the day of issue. (*Form 1*)
  - b) The owner (LMA1 and LTMA1) or Inspector (LMA2 and LTMA2) shall examine the completed model airplane immediately prior to the test flights, and shall issue a *Temporary Authorization to Fly*, provided all requirements listed in Table 2 are met. LMA Inspectors cannot sign off on their own airplane if it is a LMA2 or LTMA2.
- 2) A list of current LMA Inspectors is available on the AMA website under the Members Only Documents section.
- 3) If, for any reason, the observers are not completely satisfied with the airworthiness of the model as demonstrated, further test flights must be arranged after rectification of the faults noted.
- 4) For all LMA categories, pilots will maintain at least 100 feet of separation between the airplane and spectators during permit test flights.
- 5) Upon satisfactory completion of the test flights, all required documentation listed in Table 1.2 will be filled out and signed by the owner and LMA Inspector. Copies of all documents must be submitted to AMA Headquarters immediately, but no later than 30 days from the date of the demonstration flights. The originals must be retained by the owner and will serve as proof of inspection.

## LMA/LTMA Permitting Requirements

	LMA 1 and LTMA-1	LMA-2 and LTMA-2
<b>Builders Declaration</b>	Completed by builder/owner	
<b>Temporary Authorization</b>	Completed by owner	Completed by LMA inspector
<b>Permit to Fly</b>	Completed by owner and observer	Completed by owner and LMA inspector
<b>Inspection Checklist</b>	Completed by owner or LMA inspector	Completed by LMA inspector
<b>Turbine Addendum</b>	Completed by owner	
<b>Maneuvers</b>	<p>The owner will determine the flight envelope that will consist of at least one of the following items:</p> <ul style="list-style-type: none"> <li>i) Level maneuvers, flat turns, gentle climbs, and dives</li> <li>ii) Looping maneuvers</li> <li>iii) Rolling maneuvers</li> <li>iv) Inverted</li> <li>v) Spins</li> <li>vi) Snap maneuvers</li> <li>vii) Unrestricted aerobatics</li> </ul>	
<b>Demonstration Flights</b>	Two demonstration flights observed by the owner/pilot and either an AMA Contest Director , Leader Member, or LMA Inspector are required.	Two demonstration flights observed by an LMA Inspector
<b>Permit Documents to be Submitted to AMA</b>	<p>Temporary Authorization to Fly (<i>Form 1</i>)            Fully Completed and Accurate Permit Form (<i>Form 2</i>)            Builder's Declaration (<i>Form 3</i>)            Turbine Addendum (if applicable) (<i>Form 4</i>)            Completed Preflight Checklist (<i>Form 5</i>)            Photograph of Model (3-views with sufficient detail)</p>	

*Table 1.2*



## 6) Permit to Fly Operation

### a) Preflight Inspection:

The operator shall verify all items in the Inspection Checklist before the first flight on any day, and after the model has been disassembled and reassembled. Items marked “\*” must also be verified again before EACH flight.

### b) 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 *for a period of 30 days from the date of issue on the form*. Designated pilot(s) must comply with the minimum pilot standards of this program.

### c) All required documentation must be received by AMA Headquarters within 30 days of the demonstration flights or the *Permit to Fly* becomes invalid. In case of extenuating circumstances, the Safety Committee may accept documentation received past the 30-day deadline. These explanations must be submitted in writing and acceptance will be granted on a case-by-case basis.

## 7) Permit to Fly Suspension

### a) A *Permit to Fly* shall be considered suspended whenever the model for which it is issued:

i) suffers damage to its primary structure or any control surface

ii) suffers any control malfunction during flight, including flutter

iii) is structurally or aerodynamically modified

iv) is fitted with a different type or size of engine or engine mount

v) is fitted with different servos or batteries with lesser torque or capacity.

vi) is fitted with a different type of radio receiver

vii) is fitted with any device that alters the control system

viii) has any control surface re-covered or repainted so that its unbalanced weight is increased

ix) has not been flown during a period of twelve (12) months

x) is operated outside the flight envelope defined in its *Permit to Fly*

xi) undergoes a change of ownership

### b) AMA Headquarters must be notified immediately if a *Permit to Fly* is suspended.

### c) The AMA, through action by the Executive Director or its President, may suspend a *Permit to Fly* at any time.

- i) The owner shall be notified of the suspension in writing, including a summary for the basis of the suspension. Such a suspension can be predicated on a written complaint by two AMA members.
  - ii) The permit holder may appeal the suspension within thirty (30) days of receipt of the suspension notice. The appeal must be accompanied by all documentation which the appellant believes supports his or her position.
  - iii) 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.
  - iv) The majority decision of the AMA Safety Committee is final and binding.
- d) A suspended Permit to Fly may be revalidated:
- i) Providing repairs and/or modifications causing the suspension to have been examined and the model in its modified state is again test-flown in accordance with the permitting process.
  - ii) If the *Permit to Fly* was suspended because of ownership change, a new *Permit to Fly* must be issued with the information for the new owner.
  - iii) If the *Permit to Fly* was suspended by AMA, the course for revalidation will be addressed and established on a case-by-case basis.
- 8) Permit to Fly Cancellation
- a) A *Permit to Fly* shall be canceled whenever the model is damaged beyond repair or if modified such that it is no longer accurately described in the *Permit to Fly*.
  - b) AMA Headquarters must be notified immediately if a *Permit to Fly* is canceled.
- 9) Appeals
- i) 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.
- 10) The *Permit to Fly* is valid for three years and must be renewed every three years. This will require the same preflight inspection, and two demonstration flights of 8 to 10 minutes duration.
- 11) In addition to the *Permit to Fly* document, you will also receive via US Postal Service an Airplane Credential card that can be used to verify to the Contest Director, Event Manager, or club official that you are credentialed to fly the airplane listed on the card. It will also help you to remember to recertify the airplane prior to the expiration date on the card. You will be issued a card for each airplane you have certified through the Large Model Airplane Program.

SECTION 2: Forms

**Form 1: Temporary Authorization to Fly for all LMA and LTMA**

I have inspected this model airplane in accordance with the current LMA preflight inspection outline. To the best of my knowledge and belief the model will be suitable for the intended demonstration flights as in accordance with the program requirements.

---

Model description: e.g., yellow and black, 1/2-scale Cub

---

Name of owner

---

Signature of owner

---

Name of LMA inspector (required for LMA-2 and LTMA-2) (print)

---

Signature of LMA inspector (required for LMA-2 & LTMA-2)

---

Day of issue

---

AMA Number

This *TEMPORARY AUTHORIZATION TO FLY* is only valid on the day of issue.

**Form 2: Permit to Fly for all Large Model Airplane Classes**

**(circle)**      **New Airplane** or **Renewal**      **Type:** LMA-1    LMA-2    LTMA-1    LTMA-2

Owner's name \_\_\_\_\_ AMA # \_\_\_\_\_

Airplane type \_\_\_\_\_

Wingspan \_\_\_\_\_ Weight (wet) \_\_\_\_\_ **Observer's Initials** \_\_\_\_\_

Engine manufacturer displacement or thrust \_\_\_\_\_ Turbine

Design by \_\_\_\_\_ Color scheme \_\_\_\_\_

Construction:  Kit     Plans     Custom     Other (explain) \_\_\_\_\_

Transmitter \_\_\_\_\_ Receiver \_\_\_\_\_      Servos    aileron(s) \_\_\_\_\_ elevator(s)

Batteries \_\_\_\_\_ Power Dist Sys \_\_\_\_\_      rudder(s) \_\_\_\_\_ flaps \_\_\_\_\_

**Flight Envelope:**

- Level maneuvers, flat turns, gentle climbs and dives       Looping maneuvers
- Rolling maneuvers       Inverted flight       Spins       Snap maneuvers
- Unrestricted aerobatics

The above-described airplane has been inspected for airworthiness and has demonstrated its ability to perform within the designated flight envelope as indicated on this Permit.

**Owner:**

\_\_\_\_\_  
Owner's name (print)

\_\_\_\_\_  
Owner's signature

\_\_\_\_\_  
Date of flight

\_\_\_\_\_  
AMA number

**Observer or LMA Inspector:**

\_\_\_\_\_  
Contest Director/Leader Member/LMA Inspector Name (print)

\_\_\_\_\_  
Contest Director/Leader Member/LMA Inspector Signature

\_\_\_\_\_  
AMA Number

**Form 3: Builder's Declaration**

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

---

Model description: e.g., yellow and black, 1/2-scale Cub

---

Name (print)

---

Signature

---

Date

---

AMA Number (if applicable)

In case of ownership change, this declaration should be kept with the model.

**Form 4: Turbine Class Permit to Fly Addendum**

Addendum is for a     LTMA-1                       LTMA-2

Owner's name \_\_\_\_\_ AMA \_\_\_\_\_

Model description: e.g., yellow & black, 1/2-scale Cub

**Owner's Declaration**

I affirm that I will verify that any individual operating this turbine-powered model has the necessary experience and skill level and has a current turbine waiver/affidavit on file with the Academy of Model Aeronautics.

\_\_\_\_\_  
Owner's signature

\_\_\_\_\_  
Date

## Form 5: Checklist for Preflight Inspection

*New Airplane or Renewal (circle one)*

The following is considered the criteria for certification of a Large Model Airplane.

If appropriate, add items that might be specific to this model.

This checklist is to be completed by the owner of a LMA or 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 reinspection if failed.

The checklist is subsequently used by the operator of the airplane:

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

### 1. UNASSEMBLED 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
- ( ) Failsafe programming

## 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



- ( ) Wingtips 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
- ( ) Wingtips 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
- ( ) Radio range check
- \*( ) Ensure all flying surfaces and fuselage demonstrate appropriate stiffness and integrity

- ( ) Weight validation
- ( ) Servo torque requirements are met

## 2.6 CHECKS WITH ENGINE(S) RUNNING

- \*( ) Airplane secure before start (tied down preferred)
- \*( ) Engine performance and reliability
- \*( ) Propeller and spinner balance
- \*( ) Minimal airplane vibration
- \*( ) Radio reliability
- ( ) Radio range check
- ( ) Kill switches

*Permit to Fly* will be invalid if all required documentation is not received at AMA Headquarters within 30 days of issuing. Documentation should be **mailed to** 5161 E. Memorial Dr., Muncie IN 47302 **or emailed to** [safety@modelaircraft.org](mailto:safety@modelaircraft.org)

**APPLICATION FEE \$25.00 (no charge for renewals)**

If paying by credit card, we recommend that you call AMA HQ Safety Dept to make your payment (765-287-1256, ext 230) during regular business hours, Monday – Friday.

If paying by check, please mail completed forms and check to:

**Academy of Model Aeronautics**

**Attn: Safety Director**

**5161 E. Memorial Dr.**

**Muncie IN 47302**

### SECTION 3: Servo Torque

1. If the airplane 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.
- a) The minimum torque requirement formula for a conventional control surface is calculated as follows.

$$\text{Minimum torque} = A * \text{Chord} * \text{Span} * \text{Chord}/3 * \text{Servo Arm}/\text{Control Arm}$$

A = Airspeed Factor (see Table 2.1)

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.

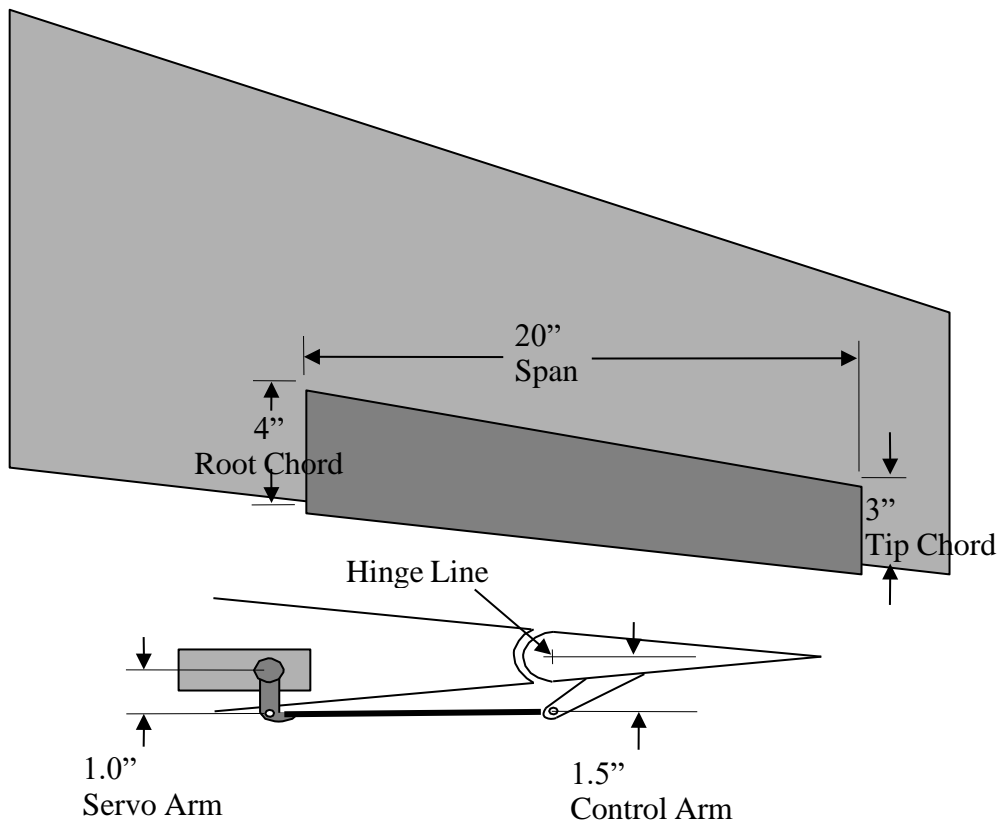
Control Arm: the distance from the hinge line to the control linkage attachment.

<i>Airspeed factor for use in both conventional and full flying formulas</i>	
Propeller and soaring/gliding airplane whose flight regime will only include level flight, flat turns, gentle climbs, and moderate dives	A = 1.25
Propeller and soaring/gliding airplane whose flight regime includes modest aerobatics, including loops, rolls, inverted flight, and spins	A = 1.5
Propeller and soaring/gliding airplane whose flight regime includes unlimited aerobatics	A = 3.0
Turbine airplane whose flight regime will only include level flight, flat turns, gentle climbs, and moderate dives and whose speed will not exceed 140 mph (also applies to sailplane/glider models with turbine self-launch systems)	A = 1.75
Turbine airplane whose flight regime includes unlimited aerobatics (also applies to sailplane/glider models with turbine self-launch systems)	A = 4.0
Full flying control surfaces on airplane whose speed is limited to 140 mph or less (applies to all LMA)	A = 3.0

<i>Airspeed factor for use in both conventional and full flying formulas</i>	
Full flying control surfaces on airplane whose speed exceeds 140 mph (Applies to all LMA)	A = 6.0

**Table 2.1**

- b) The following sketch uses an example to show how the measurements are made. Cutouts 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. All measurements are in inches, the minimum torque is in ounce- inch.



This example uses the airspeed factor for a propeller aircraft whose flight regime includes unlimited aerobatics: A = 3.0

$$\text{Chord} = (4+3)/2 = 3.5$$

$$\text{Minimum torque} = A * \text{Chord} * \text{Span} * \text{Chord}/3 * \text{Servo Arm}/\text{Control Arm}$$

$$\text{Minimum torque} = 3.0 * 3.5 * 20 * (3.5/3) * (1/1.5) = 163.33$$

c) The minimum torque requirements for a full-flying control surface is calculated as follows.

$$\text{Minimum torque} = A * \text{Area} * \text{Servo Arm/Control Arm}$$

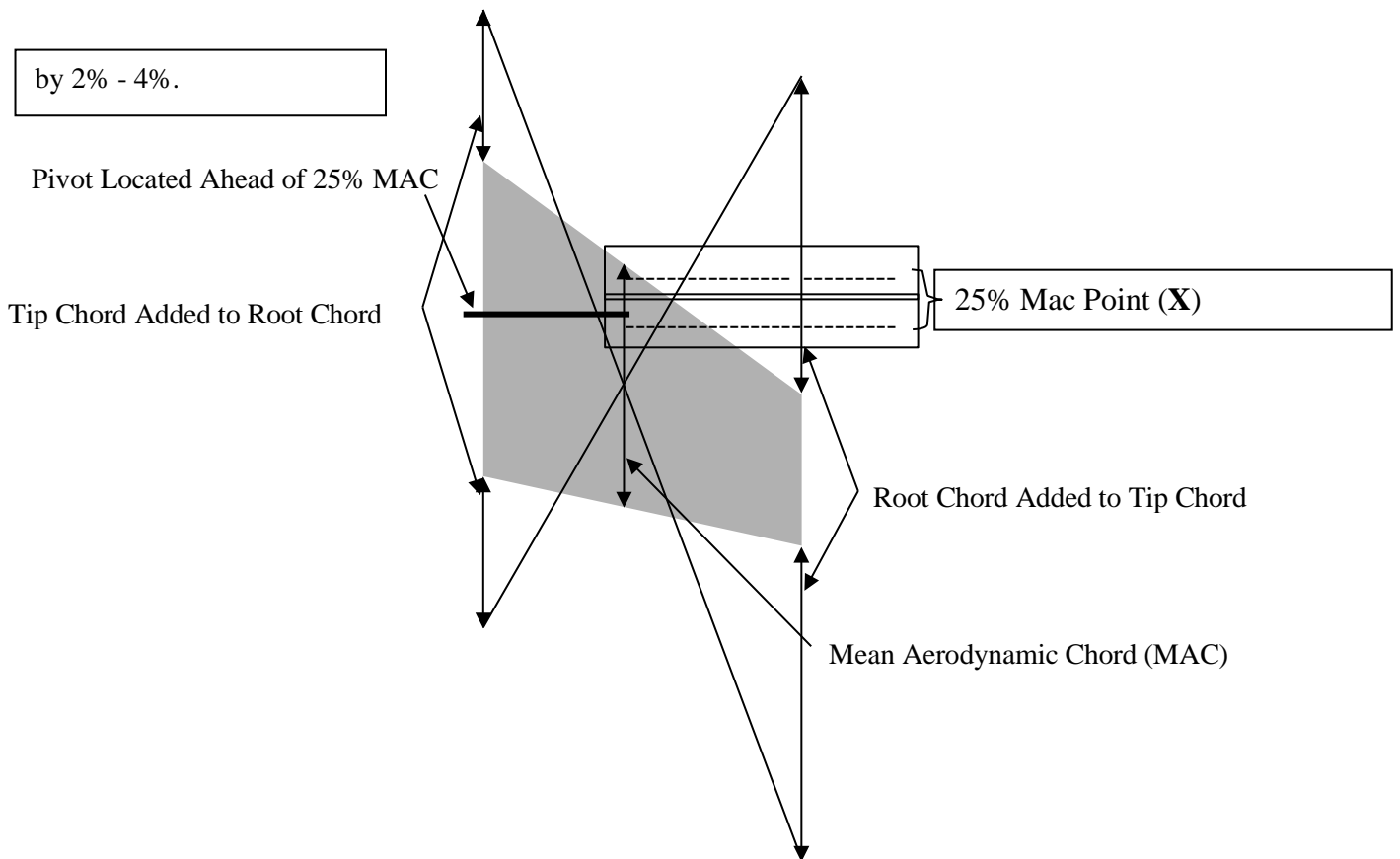
A = Airspeed factor (see Table 1)

Area = planform area of the control surface

All measurements are in inches, area is in square inches  
The minimum torque is in ounce-inches.

The pivot point for the control surface can be determined using the diagram below as long as the pivot point is ahead of the 25% Mean Aerodynamic Chord (MAC) point by 2%-4%.

Because 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 paperwork supplied to the examiner. If 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.



References:

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

*We, the undersigned, consider the applicant fully qualified to act on behalf of the AMA as a Large Model Airplane Inspector.*

Name (please print) \_\_\_\_\_ AMA # \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

I own or have owned a LMA or LTMA

I am a LMA Inspector

Name (please print) \_\_\_\_\_ AMA # \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

I own or have owned a LMA or LTMA

I am a LMA Inspector

Name (please print) \_\_\_\_\_ AMA # \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Signature \_\_\_\_\_ Date \_\_\_\_\_

I own or have owned a LMA or LTMA

I am a LMA Inspector

## Résumé

In addition to meeting at least three of the Inspector Qualification criteria, please also provide a detailed résumé.

The résumé should describe your interest in this program, why you want to volunteer as a LMA Inspector, and how you would conduct an inspection.

In addition, you must also include items such as:

- (a) Years of modeling experience involving flying and building.
- (b) Models built/flown. Please be sure to highlight all LMA or LMTA aircraft built.
- (c) Full-scale aircraft experience including type of license held, if any, as well as any background in home building such as EAA activity.
- (d) Number of years' experience as a Contest Director, if any, and major event(s) administered.
- (e) Professional experience in RC-related business such as commercial drone, radio manufacturer/repair, aircraft design, or hobby show ownership/management.
- (f) ) Ability to travel; articles published; administrative positions held.
- (g) 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.

## SECTION 5: Foreign Participants

### Event Permit to Fly

Because most 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. This requirement also applies to current MAAC members who wish to apply for an event permit and their airplane is between 77 pounds, 3 ounces and 125 pounds. This is due to discrepancies between the AMA and MAAC safety codes and liability policies.
2. Pilots/Owners must conduct an inspection according to the LMA inspection guidelines and sign an attestation that the airplane has flown a minimum of three successful flights on previous occasions (*Form LMA-6*).
3. An AMA LMA Inspector will conduct an inspection according to the LMA Program inspection guidelines for LMA-2 and LTMA-2.

The AMA LMA Inspector will issue an “Event Permit” based on the pilot’s attestation and a successful inspection (*Form LMA-7*). The issued permit will allow the airplane 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 airplane and is only valid for the dates of the sanctioned event.



**Form 6: Sanctioned Event Permit to Fly for Foreign Participants**

Owner's Name \_\_\_\_\_ AMA # \_\_\_\_\_

**Model Description:**

Airplane type \_\_\_\_\_

Wingspan \_\_\_\_\_ Weight (wet) \_\_\_\_\_

Contest Director/Leader Member/LMA Inspector Initials \_\_\_\_\_

Engine manufacturer and displacement or thrust \_\_\_\_\_

Turbine?  (check if yes) Design by \_\_\_\_\_

Color scheme \_\_\_\_\_

Construction:  Kit     Plans     Custom     Other explain) \_\_\_\_\_

Transmitter \_\_\_\_\_

Servo aileron \_\_\_\_\_

Receiver \_\_\_\_\_

Servo elevator \_\_\_\_\_

Batteries \_\_\_\_\_

Servo rudder \_\_\_\_\_

Power distribution System \_\_\_\_\_

Servo flaps \_\_\_\_\_

**Flight envelope:**

Level maneuvers, flat turns, gentle climbs and dives     Looping maneuvers

Rolling maneuvers     Inverted flight     Spins     Snap maneuvers     Unrestricted aerobatics

The above-described airplane has been inspected for airworthiness and has demonstrated its ability to perform within the designated flight envelope as indicated on this Permit. (In the case of Foreign Participants, the *Form LMA-7* will be attached to this form attesting to three successful previous flights)

\_\_\_\_\_  
Owner or Contest Director/Leader Member/  
LMA Inspector Name (print)

\_\_\_\_\_  
Owner or Contest Director/Leader Member/  
LMA Inspector Name (signature)

Date of issue \_\_\_\_\_

*Permit to Fly* is only valid for the dates of the sanctioned event.

**Documentation should be mailed to 5161 E. Memorial Dr., Muncie IN 47302 or emailed to [safety@modelaircraft.org](mailto:safety@modelaircraft.org).**

**Form 7: Event Permit to Fly – Foreign Participant Attestation**

Owner/Pilot Attestation:

I, \_\_\_\_\_, hereby attest that the model airplane,

\_\_\_\_\_

**Model Description**

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

\_\_\_\_\_  
Owner/Pilot Name (print)

\_\_\_\_\_  
Owner/Pilot Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
AMA Number

## SECTION 4: Inspectors

For a list of inspectors, access our website at [www.modelaircraft.org](http://www.modelaircraft.org). Log in to the website and move your mouse over the heading *Media & Resources* and then select *AMA Documents* from the blue drop-down box. Next, find *Large Model Airplane Program (over 55 pounds)* and click on "+". Select document 520-B to see the current listing, or contact:

Academy of Model Aeronautics  
Safety Department  
5161 E. Memorial Dr.  
Muncie IN 47302  
(765) 287-1256, ext. 230  
[safety@modelaircraft.org](mailto:safety@modelaircraft.org)

### A) Overview

- 1) The AMA maintains a pool of potential inspectors for the Authorization Procedure for Large Model Airplane. This procedure is designed to provide insurance for individuals wishing to fly model airplane between 55 and 125 pounds in specific, controlled situations.
- 2) This pool of prospective inspectors may be found on the AMA website Members Only Section under Members & Club tab ([www.modelaircraft.org](http://www.modelaircraft.org)).
- 3) Individuals desiring appointment to the inspector pool can do so by submitting a complete application to AMA Headquarters. Application involves completing the appropriate form LMA-8, as well as providing a résumé detailing qualification and a list of references. A majority approval vote of the Safety Committee members will result in the addition of the individual to the inspector pool. Additional names can be added to the pool by the Safety Committee or Executive Council if needed, to adequately maintain the program.
- 4) 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 program.
  - c) To not charge for services (compensation for expenses and travel are permissible).
  - d) Inspector cannot be the builder, pilot, owner, or buyer/seller of the LMA-2 or LMTA-2 airplane being inspected.
  - e) Inspector must be a current AMA member when inspecting an airplane.

5) AMA's member insurance coverage applies to a certified Large Model Airplane 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 flight approval.

B) Inspector Qualifications

- 1) Applicants for the Large Model Airplane Inspector designation will complete and submit the LMA Inspector application, form LMA-8. The application will be reviewed and acted upon by the AMA Safety Committee.
- 2) The candidate must meet at least three of the following criteria to be considered for approval:
  - a) A minimum of 10 years of AMA membership.
  - b) Must be one of the following: Contest Director, Leader Member, Life Member, AMA Committee Member, or EC/AVP past or present.
  - c) Must have owned/built and flown at least one LMA/LTMA-1 at a minimum.
  - d) At least one of the three references must be an LMA owner or inspector.
  - e) Professional or educational experience with design of unmanned aircraft over 55 pounds.
- 3) Applicant must submit a written résumé addressing all applicable information as requested in the resume section of the application.
- 4) Inspectors are the AMA's representative at both the time of inspection and demonstration flights. That inspector must ensure that all provisions of this document are satisfied. If an inspector is suspected of an improper or superficial inspection, falsification of forms or other misconduct the Safety Committee may, at its sole discretion, suspend an inspector's designation until such time as the Committee completes an investigation. At that time, the LMAI Inspector designation will either be revoked or reinstated.

C) Guidelines for Inspection

- 1) Inspector should validate the following information:
  - a) Total weight, ready to fly, with fuel. The Contest Director/Leader Member/LMA Inspector will either provide the scales or take reasonable effort to check the accuracy of the scales used.
  - b) Weight and balance methods and data provided by builder.
  - c) Servo torque requirements provided by kit manufacturer or servo torque calculations per Section 4 of the LMA regulations.
  - d) AMA card.

- e) Pilot qualifications for LTMA permit applications.
  - f) Builder's Declaration, form 3.
  - g) Turbine class addendum if applicable, form 4.
  - h) Compliance with Foreign Participant Requirements, if applicable.
  - i) Ground support or fire suppression equipment as necessary or required.
- 2) Conduct preflight inspection, completing form 5.
  - 3) Photograph model (3-view with sufficient detail).
  - 4) Complete a safety check of the site to ensure compliance with Section 1.C.4) if applicable.
  - 5) Issue Temporary Authorization to Fly, completing form 1.
  - 6) Preflight briefing
    - a) Inspector expectations.
    - b) Maneuvers to be performed.
    - c) Emergency procedures.
  - 7) Flight
    - a) All flights will be done in accordance with the current Safety Code, particularly that all pilots shall avoid flying directly over unprotected people, vessels, vehicles, or structures, and shall avoid endangerment of life and property of others. The model airplane 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.
    - b) Flight maneuvers shall not exceed the design limits of the vehicle.
    - c) Flight velocity shall not exceed 120 mph in level flight for LMA-2.
    - d) The flight test program should include the following items during the initial two shake-down flights, *prior* to certification:
      - i. First flights shall be relatively short in duration and be devoted to checking out the "trim" of the airplane. 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.
      - ii. 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 airplane was capable of aerobatics (and they are to be part of the

flight demonstration), then inverted flight, spins, etc. should be included.

iii. The final test-flight conducted for the inspector shall demonstrate the entire flight envelope as might be flown at sanctioned event demonstrations.

- 8) Post-flight debriefing and airplane inspection is required.
- 9) Review of completed paperwork with owner/pilot.
- 10) Issue Permit to Fly, form LMA-2.
- 11) Submit required paperwork immediately to AMA headquarters.

**Form 8: Inspector Application**

Name \_\_\_\_\_ AMA # \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

Phone (\_\_\_\_\_) \_\_\_\_\_ - day (\_\_\_\_\_) \_\_\_\_\_

evenings (\_\_\_\_\_) \_\_\_\_\_

Email \_\_\_\_\_ Fax \_\_\_\_\_

Occupation \_\_\_\_\_

**I pledge that if I am granted LMA Inspector status, I will:**

Maintain a high level of proficiency in the use of materials as well as building and flying techniques for large airplane models.

Maintain strict safety standards and adherence to the AMA Safety Code, the AMA Large Model Airplane Program, and its authorization documents.

Submit all required documentation promptly.

Please check all that apply:

- I have been an AMA member for at least 10 years.
- I am a Contest Director, AMA Leader Member, AMA Life Member, AMA committee member, or present/past AMA Executive Council member, or AMA Associate Vice President.
- I own/built and have flown at least one LMA/LTMA-1 airplane (list each applicable model in résumé.)
- I have professional or educational experience with design of unmanned aircraft over 55 pounds (please provide more details in résumé.)
- At least one of my references is an LMA owner or inspector.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

