



# **Model Aeronautics Association of Canada Safety Guidelines**

**Effective Date:** July 1, 2009

**Board Approved Date:** March 29, 2009

**Version:** 009

**CHECK THE MAAC WEB-SITE FOR THE MOST CURRENT VERSION OF THE SAFETY  
GUIDELINES.**



# MAAC SAFETY GUIDELINES

Effective Date: July 1, 2009

## DOCUMENT REVISION LOG

REVISION	DESCRIPTION	ISSUED BY	ISSUE DATE
001	Initial Draft	Safety Chairman	SEPT. 14, 2004
002	Update Fence Location	Safety Chairman	SEPT. 17, 2004
003	Add Approved Date, Correct Spelling, and Formatting Error.	Safety Chairman	SEPT. 25, 2004
004	Add Board Approved Recommendations from 2005 AGM	Safety Chairman	JUNE 5, 2005
005	Update fence definition section 4.2	Safety Chairman	SEPT. 19, 2005
006	Add Board Approved Recommendations from 2006 AGM. Add Climb and Glide rules.	Safety Chairman	MAY 9, 2006
007	Revisions to "All Categories" section 4.1	Safety Chairman	SEPT. 11, 2008
008	Amend All categories section #9	Safety Chairman	SEPT. 30, 2008
009	Separate Safety and Guidelines into 2 documents	Safety Chairman	JULY 1, 2009



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## 1 FREE FLIGHT

**When operating any Free Flight model aircraft MAAC members will adhere to the following:**

1. I will not launch my model aircraft unless I am at least 45 metres downwind of spectators and automobile parking.
2. I will not fly my models unless the launch area is clear of all persons except my mechanic and officials.
3. I will employ the use of an adequate device in flight to extinguish any fuses on the model after it has completed its function.

## 2 CONTROL LINE

**When operating any Control Line model aircraft MAAC members will adhere to the following:**

1. I will subject my complete control line system (including mandatory safety thong) to an inspection and pull test prior to flying.
2. I will use wire sizes and terminations as specified in the MAAC Control Line Competition Rules book.
3. I will assure that my flying area is safely clear of all utility wire or poles.
4. I will assure that my flying area is safely clear of all nonessential participants and spectators before permitting my engine to be started.
5. I will use a safety thong when sport or contest flying. (The only exception being when flight training is being carried out with 1/2A models under the supervision of a qualified pilot.)

## 3 RADIO CONTROL

### 3.1 All R/C Categories

**When operating any Radio Control model aircraft MAAC members shall adhere to the following:**

1. I will complete a successful radio equipment ground range check before the first flight of the day.
2. I will not fly my model aircraft in the presence of spectators until I become a qualified flyer, unless assisted by an experienced R/C Pilot.
3. I will perform my initial turn after take off away from the pit, spectator and parking areas.
4. I will not perform flight of any sort, including aerobatic maneuvers, or landing approaches, over a pit, spectator or parking areas.
5. I will not fly on the pilot station side of the Flight-line (see figure 1).
6. I will not knowingly operate an R/C system within 4km of a pre-existing R/C aircraft club flying site without a frequency sharing agreement with that club.



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7. I will not deliberately fly an aircraft without visual contact. (ie. the aircraft must be kept within "line of sight" of the R/C Pilot).
8. That all powered R/C aircraft, equipped with fail-safe function have it programmed so that the throttle is set to idle. The other controls can be set as the pilot sees fit.

**Flight Line – Is a line in any direction that maintains all minimum distances (see fig. 1 Minimum Field Layout Section 4.5)**

## 3.2 R/C Field Operations

**All pilots must be current MAAC or AMA members.**

1. R/C Pilot's (shall) yield "right of way" of their model aircraft to man carrying piloted aircraft with no exceptions. (When man-carrying piloted aircraft are in the proximity of model flying operations, launching of models shall cease immediately, and in - flight models shall be landed if feasible or steered well away from the flight path of the full sized aircraft).
2. Pyrotechnic and explosive devices (shall) not be carried or activated by model aircraft.
3. There (shall) be no more than five (5) aircraft airborne at any one time at a field unless, operating under rules of a specific discipline (ex. R/C Combat, and all climb and glide categories),
4. As a minimum, transmitter frequencies (shall) be controlled utilizing a MAAC Frequency Board and pilot frequency pins.
5. MAAC chartered clubs (shall) use a wings program to train R/C Pilots.
6. R/C Pilot Instructors :
  - a. Shall be highly capable individuals who can provide adequate training.
  - b. Shall consistently demonstrate safety by example and attitude.
7. R/C Pilots shall announce any intention to take-off, land or move onto the active runway.
8. 2.4 GHz and 27 MHz Radio systems are permitted when used in accordance with manufacturers recommendations and Industry Canada regulations.
9. The permitted transmitter frequencies for R/C aircraft operation are:

<u>Channel</u>	<u>Frequency</u>	<u>Channel</u>	<u>Frequency</u>	<u>Channel</u>	<u>Frequency</u>	<u>Channel</u>	<u>Frequency</u>
	<u>(MHz)</u>		<u>(MHz)</u>		<u>(MHz)</u>		<u>(MHz)</u>
B1	53.100*	11	72.010	28	72.350	45	72.690
B2	53.200*	12	72.030	29	72.370	46	72.710
B3	53.300*	13	72.050	30	72.390	47	72.730
B4	53.400*	14	72.070	31	72.410	48	72.750
B5	53.500*	15	72.090	32	72.430	49	72.770
B6	53.600*	16	72.110	33	72.450	50	72.790
B7	53.700*	17	72.130	34	72.470	51	72.810
B8	53.800*	18	72.150	35	72.490	52	72.830
0	50.800*	19	72.170	36	72.510	53	72.850
1	50.820*	20	72.190	37	72.530	54	72.870
2	50.840*	21	72.210	38	72.550	55	72.890
3	50.860*	22	72.230	39	72.570	56	72.910
4	50.880*	23	72.250	40	72.590	57	72.930
5	50.900*	24	72.270	41	72.610	58	72.950
6	50.920*	25	72.290	42	72.630	59	72.970
7	50.940*	26	72.310	43	72.650	60	72.990
8	50.960*	27	72.330	44	72.670		

**\* A valid Amateur Radio Operators License is required to own and operate equipment on the 50 and 53 MHz frequencies. Transmitters shall be used in accordance with Canadian Government regulations.**



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10. R/C flying demonstrations (shall) only be done by qualified pilots (as determined by club). The MAAC Safety Code (shall) be followed during demonstrations.
11. Aircraft should be operated in areas of the sky where any results from an accident are minimized.
12. All non-flying activities (shall) be in an area 30 metres or more from the flight-line. This includes, but is not limited to, spectator and parking areas as well as supervised play areas.
13. A Flight-line will be established seven (7) metres in front of pilot stations.
14. R/C Pilots (shall) control their model aircraft from marked Pilot Stations. Take off and landing may be done from the runway if the intention is announced to the other R/C Pilots.
15. Spectators and visitors are permitted in the Pit and Pilot Station areas only under direct supervision of a R/C Pilot.
16. A fence or barrier (eg 1 metre high snow fence) shall be used at Club Affiliate Member registered fields for land operations of powered models where aircraft greater than 1 kilogram in weight are flown. The purpose of the fence/barrier being to protect person(s) at pilot station(s) from being struck by errant aircraft operating on or near the ground (eg. Taxiing, landing, takeoff).
17. At Club Affiliate Member registered fields for land operations of powered models where aircraft greater than 1 kilogram in weight are flown, the pit area shall be a minimum of ten (10) metres from the flight-line. A fence or barrier shall be utilized to prevent errant aircraft from entering the pit area. A single fence/barrier may be used to protect both the pilot station(s) and pit area or separate barriers may be used. Where the pits are more than thirteen (13) metres from the flight line, fence protection of the pits is not mandated.
18. At club affiliated member registered fields where safety fences are "not" permitted eg. Sod farms, parks and float fly sites. The distance between the flight line and the pilot stations shall be increased to at least 10 metres. The distance between the flight line and the pit area shall be increased to at least 13 metres. All non-flying activities shall be 40 metres behind the flight line. This includes but is not limited to spectator and parking areas as well as supervised play areas.
19. R/C Pilots are responsible for the airworthiness of the model aircraft they fly. R/C Pilots following a club or MAAC wings program will ask a club instructor to inspect their aircraft for airworthiness.

### **3.3 R/C Club Responsibilities**

**Club responsibilities will include but are not limited to the following:**

1. A wings program is used to train R/C Pilots.
2. Discipline (if necessary) of R/C Pilots that refuse to follow MAAC Safety Code.
3. Establishing guidelines/procedures for visiting R/C Pilots.
4. Determining which club members are qualified demonstration R/C Pilots.
5. Establishing a field layout that conforms to the MAAC Safety Code.
6. Clearly marking Pilot stations (for specific disciplines).
7. Having clearly defined boundaries for the pit area.
8. No flying is permitted while field maintenance is going on in the Flight Zone.



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## 3.4 R/C Field Etiquette

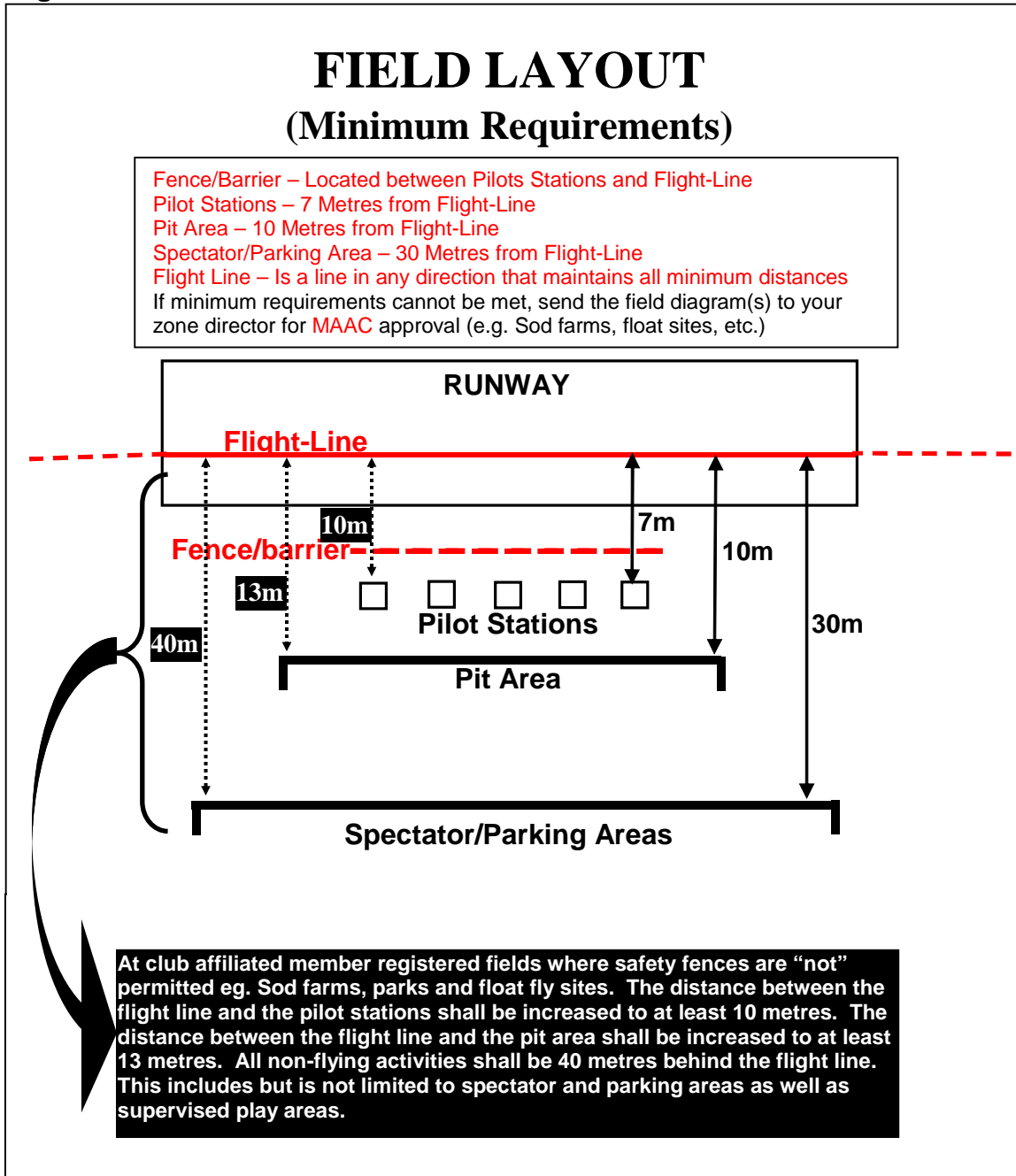
**The Field Etiquette is intended to outline those matters that are expected of all modellers/pilots as common courtesy and for every ones safety.**

1. All R/C Pilots/modelers shall respect the safety codes.
2. R/C Pilots/modelers will restrict their use of the operating frequency when others are waiting.
3. R/C Pilots/modelers shall ensure that the operation of their model does not interfere with the enjoyment of the hobby/sport by others. These would include but are not limited to loud aircraft, unnecessary running of model engines in pit area, slipstream (propwash).
4. R/C Pilots/modelers are responsible for their guests or visitors including children and pets.
5. R/C Pilots/modelers shall be considerate when sharing the sky with other R/C Pilots/modelers by operating their aircraft in a way not to interfere with others.
6. If R/C Pilots/modelers fly their model aircraft within ten (10) Km of the centre of an airport, notice of operations will be given to the airport authority and/or tower. A spotter shall be used to avoid having models fly in the proximity of full size aircraft.
7. Safety practices are required in the pit area. MAAC members will adhere to the following:
  - (a) Metal propellers shall not be used. Pure nylon propellers (does not include the glass filled type) will not be used on engines of .40 cubic inch or larger. Repaired or damaged propellers will not be used.
  - (b) Pilots shall ensure that no one is standing in line with the propeller arc of operating engines.
  - (c) Aircraft will not be taxied in the pit area.
  - (d) When running model engines the model shall be placed to minimize the effects of slipstream (propwash).
  - (e) Slipstream effects from running engines can be dangerous to all affected and models should be positioned to minimize these effects.
  - (f) Smoking is prohibited in the pit area.
  - (g) Propellers will be secured in accordance with the engine and propeller manufacturer's recommendations.
  - (h) R/C Pilots are responsible for ensuring their spotter/helper is properly briefed regarding the carrying, testing, adjusting and general handling of the model aircraft.



## 3.5 Minimum Field Layout

Figure 1







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## 3.6 R/C Night Flying

**Night is defined as the time between 1/2 hour after sunset and 1/2 hour before sunrise. When operating any Radio Control model aircraft at night MAAC members will adhere to the following:**

1. I will equip my night flying aircraft with a lighting system that clearly defines the aircraft's attitude.
2. I will test the lighting system of my night flying aircraft prior to every night flight.
3. I will limit my night flying aircraft to aircraft not capable of speeds in excess of 100 km/h.

## 3.7 R/C 3D Aerobatics (airplanes)

**3D Flight is defined as any deliberate maneuver where the aircraft's flying surfaces are stalled and the airplane doesn't move in a normal flight path. (Ex. Airplane hovering, blender, harrier pass). When operating any Radio Control model airplane performing 3D aerobatics MAAC members will adhere to the following:**

1. I will not deliberately perform any 3D aerobatics without announcing my intentions to the other flying R/C Pilots.
2. I will not perform low level (less than 10 metres) 3D airplane aerobatics along the flight-line while other aircraft are airborne.
3. I will follow any safety rules as established by the Scale Aerobatics committee.

## 3.8 Indoor R/C

1. I will fly aircraft (in size, weight, speed and other flight characteristics) that are compatible with the size of the indoor flying space.
2. I will ensure that my aircraft and radio control equipment are in good condition and fully functional, prior to the first flight at each flying session.
3. I will abide by the safety rules for the flying site I use, and will not willfully or deliberately fly my model(s) in a careless, reckless, or dangerous manner.
4. I will follow the recommendations of the manufacturer or supplier of the cells/batteries I am using in regard to their safe usage, charging, and disposal, and I will closely monitor my batteries while charging.
5. I will abide by any rules or restrictions requested by the owner or manager(s) of the building.
6. I will not leave behind any model parts, wreckage, or other materials or refuse when leaving the flying site.



## 4 GIANT SCALE

### 4.1 Introduction

These Safety Guidelines, in various formats, have been in use in the MAAC for over five years. They have been purposely designed to follow the IMAA Safety Code in all matters except the weight limit as shown in section below, which is in keeping with MAAC insurance requirements. By following a common safety standard with IMAA, we are enhancing the safe and simple enjoyment of giant scale by our members at events on both sides of the Canadian-USA border. These Safety Guidelines have proven themselves over many years of experience by thousands of North American modelers and pilots of Giant Scale model aircraft. The MAAC Giant Scale Committee endorses the IMAA Safety Code and acknowledges the permission of the IMAA Board of Directors for its use by MAAC in these Safety Guidelines.

### 4.2 Safety Standard

1. Adherence to Code: These Safety Guidelines should be followed.
2. The most current MAAC Safety Code in effect is to be observed.
3. The Safety Officer should make sure that all participants in a MAAC Giant Scale sanctioned event are fully cognizant of the fact that the operation of radio controlled aircraft can be dangerous and such participants should always be alert.

### 4.3 Safety Officer

1. Each MAAC Giant Scale Sanctioned event shall have an appointed Safety Officer who, in turn, will appoint a Field Marshall and additional Safety Committee members, who shall be responsible for general safety, including aircraft inspections, pilot helpers and spotters, flight line control, frequency control, crowd control, fire hazards, smoking precautions, and pit pass control.
2. The Safety Officer(s), required by these Safety Guidelines, shall help and assist the pilot (or owner), and are not to determine the technical airworthiness of a model, or the competence of the pilot. Ultimately, it shall be the responsibility of the pilot (or owner), and his alone, for a safe model and a safe flight.
3. The Safety Officer shall enforce the current MAAC Safety Code.

### 4.4 Safety Check

1. All giant size radio controlled model aircraft shall pass an "Airworthiness" safety inspection by flight safety personnel.
2. The MAAC Giant Scale Official Safety Inspection Form shall be used for the purpose of inspecting aircraft for any deficiencies/requirements. It shall be completed and signed by the pilot and the Safety Inspector. Copies of this MAAC Safety Inspection Form are available from the Giant Scale Committee Chairman, MAAC HQ and the MAAC website.
3. After inspection, the aircraft may be flown as often as the pilot desires, provided that he/she follows the chosen frequency control standard. However, if the airplane is involved in an accident, no matter how minor, and the pilot wishes to fly again, the aircraft shall go through another safety inspection check.



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4. Flight Testing: All aircraft shall have been flight tested and flight trimmed with a minimum of six (6) flights before the model shall be allowed to fly at an IMAA Sanctioned event.
5. Proof of Flight: The completing and signing of the Declaration section of the Safety Inspection form by the pilot (or owner) shall document, as fact, that the noted aircraft has been successfully flight tested and proven airworthy prior to the MAAC event.

## 4.5 Spotter / Helper

1. Spotter/ Helper Definition: An assistant to aid the pilot during start-up, taxiing onto the runway, and to keep pilot alert to others in the air and on the runway.
2. Each pilot shall be required to have a spotter / helper at all sanctioned events.

## 4.6 Emergency Engine Shut Off (Kill Switch)

1. Magneto spark ignition engines shall have a coil-grounding switch on the aircraft to stop the engine. This shall also prevent accidental starting of the engine. This switch shall be readily available to both pilot and helper. This switch shall be operated manually and without the use of the Radio System.
2. Engines with battery powered ignition systems shall have a switch to turn off the power from the battery pack to disable the engine from firing. This shall also prevent accidental starting of the engine. This switch shall be readily available to both pilot and helper. This switch shall be operated manually and without the use of the Radio System.
3. There shall also be a means to stop the engine from the transmitter. The most common method is to close the carburetor throat completely using throttle trim, however other methods are acceptable. This requirement shall apply to all glow/gas ignition engines regardless of size.

## 4.7 Radio Requirements

1. All transmitters shall be DOC/FCC type certified.
2. Ham license shall be required for 6 meter band operation only.

## 4.8 Maximum Aircraft Allowances

1. MAAC aircraft weight shall not to exceed 35 kilograms (77 pounds), including a full load of all liquids (engine fuel, smoke fluid, etc.)

**Note: This weight is a Canadian Standard, If you are flying in the USA you are subject to the IMAA/AMA limits of 55 pounds unless you make prior arrangements to have an "Experimental Aircraft" category inspection and permit which goes up to 100 pounds. Copies of the Experimental Class Rules are available through the AMA. It is the pilot/modeler's responsibility to obtain such permits etc prior to participating in USA events with a/c over 55 pounds. Also see " Models exceeding 35 Kg/77 lbs" at the end of this document.**

## 4.9 Flying Site Layout

1. The flying site shall be set up to provide, at minimum, a separation of 65 feet from the near edge of the runway to the beginning of the spectator area, and where possible, a distance of 100 feet or more is recommended.
2. A specific area shall be set aside for engine test runs. This area shall be remote from the spectator area, pits, and flight stations to reduce danger and annoyance to persons in



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this area. No engine shall be started in any area other than the engine test area and runway entrance(s).

**The following recommendations are included in these Safety Guidelines not to police such items, but rather to offer basic suggestions for enhanced safety:**

- (i) Servos need to be of a rating capable to handle the loads that the control surfaces impose upon the servos. Standard servos are not recommended for control surfaces. Servos should be rated heavy-duty ounces of torque. For flight-critical control functions a minimum of 45 inch/ounces of torque should be considered. This should be considered a minimum for smaller aircraft and higher torque servos are strongly encouraged for larger aircraft. The use of one servo for each aileron and one for each stabilizer half is strongly recommended. Use of dual servos is also recommended on larger aircraft.
- (ii) Onboard batteries should be, at a minimum, 1000 maH up to 20 lbs., 1200 maH to 30 lbs., 1800 maH to 40 lbs., and 2000 maH over 40 lbs. flying weight. The number and size of servos, size and loads on control surfaces, and added features should be considered as an increase to these minimums. Batteries should be able to sustain power to the onboard radio components for a minimum of one hour total flying time before recharging.
- (iii) Dependable redundant and fail-safe battery systems are recommended.
- (iv) The use of anti-glitch devices for long leads is recommended.
- (v) There is no maximum engine displacement limit, as it is the position of this body that an under powered aircraft presents a greater danger than an over powered aircraft. However, the selections of engine size relative to airframe strength and power loading mandates good discretionary judgment by the designer and builder. Current maximums for engine displacement are 6.0 cu. in. for two-stroke and 9.6 cu. in. for four-stroke engines. These maximums apply only to AMA Sanction competition events such as 511, 512, 515 and 520.
- (vi) Generally, it is recommended that no attempt should be made to fly a radio controlled model aircraft with a gasoline engine in which the model aircraft weight would exceed 12 pounds per cubic inch of engine displacement (under powered), or be less than 5 pounds per cubic inch of engine displacement (overpowered). Example: Using a 3 cu. in. engine, a model would likely be under powered at an aircraft weight greater than 36 pounds. With the same engine, an aircraft weighing less than 15 pounds would likely be overpowered.
- (vii) Servo arms and control horns should be rated heavy duty. Glass filled servo arms and control horns are highly recommended.
- (viii) Control surface linkages are listed in order of preference:
  - a. Cable system (pull-pull). A tiller bar is highly recommended along with necessary bracing.
  - b. Arrow-shaft, fiberglass or aluminum, 1/4" or 5/16" OD. Bracing every six (6) to ten (10) inches is highly recommended.
  - c. Tube-in-tube (nyrod). Bracing every few inches is highly recommended. Inner tube should be totally enclosed in outer tube.
  - d. Hardwood dowel, 3/8" OD. Bracing every six (6) to ten (10) inches is highly recommended.



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- (ix) Hinges should be rated heavy duty and manufactured primarily for use in giant sized aircraft. Homemade and original design hinges are acceptable if determined to be adequate for the intended use.
- (x) Clevis (steel, excluding heavy-duty ball links) and attachment hardware should be heavy-duty 4/40 thread and rod type. 2/56 thread size rod is acceptable for some applications (e.g. throttle). Clevises must have lock nuts and sleeve (fuel tubing) or spring keepers.
- (xi) Propeller tips should be painted or colored in a visible and contrasting manner to increase the visibility of the propeller tip arc.

## 4.10 Models exceeding 35 Kg/77 lbs

**From time to time the question of what to do with those rare models that show up that exceed the 35kg or 77lb weight restriction. Such cases are rare but the CD needs some guidance in dealing with the situation. The following applies these situations:**

1. The modeler/pilot shall provide proof of insurance coverage. This shall be for the same amount of coverage as the current MAAC policy and shall indicate that the host club, the field owner and MAAC are covered.
2. A Canadian modeler shall also possess a Transport Canada Special Flight Operating Certificate (SFOC) for a model exceeding 35 kg. (These are obtained through application to the General Aviation branch of Transport Canada)
3. The CD's permission is paramount. It must be stressed that the CD at the time and place is the best judge of whether the conditions, field, spectator safety, etc as to whether such models shall be permitted a flight even with the provisions given above.

## 5 TURBINE

**When operating any Turbine Engine model aircraft MAAC members will adhere to the following:**

1. Prior to the first flight of the day, I shall do a thorough physical inspection of my turbine powered model.
2. I shall have an effective, operational Carbon Dioxide or other suitable fire extinguisher (not powder) within reach during all turbine operations.
3. At MAAC sanctioned events where turbine powered aircraft are invited, the organizer shall provide fire fighting equipment appropriate to the local conditions.
4. I shall use wheel brakes on my turbine engine model aircraft unless the aircraft can be demonstrated to remain motionless when released with engine at idle.
5. I shall not use flexible plastic bags (i.e. Intravenous bags ) as fuel tanks in turbine engine model aircraft.
6. I shall fuel and start my turbine engine model aircraft following safety procedures established by the manufacturer. The turbine must be shut down during refueling.
7. Turbines whose primary fuel is a compressed gas (i.e. propane) shall not be flown in a model aircraft. (Small containers for start up gas are still permitted.)
8. Gas turbine powered models shall incorporate a radio failsafe which will shut down the engine within 2 seconds in the event of loss of signal.
9. I shall ensure that the tailpipe (exhaust) is not pointed at any person, combustible or fragile object. A blast deflector should be used if this is not possible.



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10. I shall ensure all non-essential personnel remain 10 meters from the turbine engine model aircraft during the starting process. No person must be allowed to stand close to an operating engine in the rotational plane of the compressor or turbine.
11. I shall have an electrical (i.e. solenoid) or manual fuel shutoff valve in the fuel delivery system capable of shutting off fuel flow in the event of an emergency.
12. I shall not fly a turbine powered aircraft in a speed, record setting, or racing event in Canada
13. I shall have a spotter/assistant when operating a turbine model aircraft.
14. Inexperienced operators should seek the assistance of an experienced turbine operator before running a gas turbine. If in doubt - seek help.
15. I will not run a gas turbine if the surrounding environment presents a fire risk unless adequate precautions are taken to negate the risk

## 6 ELECTRIC

### 6.1 Electric Aircraft Operation

**When operating any Electric powered model aircraft MAAC members shall adhere to the following:**

1. Shall install and use all equipment according to the recommendations of the original equipment manufacturer (OEM) or supplier.
2. I should, when working with equipment previously owned by another modeller, get and follow the OEM documentation.
3. Shall disconnect the main power batteries whenever the model is not being flown or serviced.
4. Shall remove the propeller when applying power to the motor for initial or subsequent bench testing. I shall always follow the ESC and motor manufacturer's guidelines for safe use.
5. Shall always set my transmitter to a safe starting position before activating my aircraft and I shall follow the ESC manufacturer's instructions for safe use.

### 6.2 Battery Use

**Warning: All batteries have the potential for fire or explosion when improperly charged, stored or transported, especially lithium polymer batteries. Chemical reactions are not instantaneous, a lithium-based battery that has been shorted or damaged may not ignite for 10 minutes.**

1. Shall Always use a charger specifically designed for the battery's chemistry. (Nickel cadmium (NiCd) charger for NiCd batteries, Lithium Polymer (LiPo) charger for LiPo battery packs etc.) Most chargers are able to charge several battery chemistry types.
2. I shall follow the battery and charger manufacturers' instructions for safe use.
3. Where feasible, I shall store and transport batteries outside of the aircraft in a non-conductive container, protected from metal objects that could allow a cell or pack to short out.



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4. Shall place any crashed battery, even if not deformed, in a safe and isolated area for observation for at least 15 minutes to ensure no delayed violent reaction occurs.

## 5. INDOOR

**When operating any Non-R/C Indoor model aircraft MAAC members will adhere to the following:**

1. I will not fly electric, CO<sub>2</sub> or rubber powered models in excess of one ounce (28.35gr) in an indoor site without special attention to the safety of other modelers and their aircraft.
2. I will not climb ladders or access other elevated superstructure of a building, without the permission and guidance of the custodian.
3. I will ensure that all damaged model parts containing special materials will be returned to the workshop for proper disposal of boron or carbon fibres.

## 6. R/C CLIMB & GLIDE CATEGORY

1. The Climb-and Glide R/C categories include such disciplines as powered sailplanes, Old Timer and Antique (SAM) aircraft, thermal duration sailplanes (winch or rubber launched, hand towed and hand launched), slope-flown sailplanes, aero-towed sailplanes, etc. Normally climb-and-glide aircraft are launched and flown immediately to high altitude, then soared with view to prolonging the flight using thermal activity in the atmosphere. The aircraft usually are incapable of taxiing to a runway area, and normally are both prepared for flight and launched into wind from one point on a field (chosen on the basis of field geometry, wind direction, etc.). The position of the pilot often changes during the course of the flight. (The usual concepts of a "runway", "flight-line", and "fixed pilot stations" are not applicable. There may or may not be a designated "pit" area.)
2. "No-fly zones" shall be established as appropriate to each specific field where the aircraft are being flown for sport or competition. No low flying shall be allowed above these zones. The no-fly zones shall always include the pit and parking areas, but can also include a launch or takeoff area, neighbouring buildings, private homes or properties, or any other sensitive areas specific to the field and its environs.
3. Designated takeoff and landing areas shall be established at least 30 metres away from parked vehicles.
4. Launch Line: Where multiple aircraft are being launched simultaneously or at close time intervals, aircraft are launched directly into wind from a launching line ("starting" line) perpendicular to the wind direction and wide enough to accommodate the number of aircraft being prepared for launch. During or immediately after climb-out, the pilot shall move back or away from the line of takeoff to continue the flight.
5. Takeoff Area: Where single sequential takeoffs and landings share the same area, common in flight operations such as aero-tow of sailplanes and in many types and situations of powered sailplanes and Old Timer (SAM) types, the pilot and helper(s) shall remain at the launching position only long enough to climb to a safe altitude, then move to a position clear of the takeoff/landing area for the remainder of the flight.
6. When using the same area for takeoffs and landing, unless specific rules for a contest or discipline dictate otherwise, the landing aircraft shall be given right-of-way
7. Aircraft must not be launched unless the area directly ahead of and to either side of the launch path is clear of people, equipment and other obstructions.



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8. Engine-powered aircraft when being started must be restrained by mechanical means or by a helper until launched
9. Flight at high altitude may take place in any clear and safe area of the sky. Landing must be done in a designated landing area.
10. The maximum number of aircraft in the air at any one time shall be determined, and modified as required, based on the characteristics of the Climb-and-Glide disciplines being flown, the skill of the pilots, and the prevailing atmospheric conditions.
11. When Climb-and-Glide aircraft are being flown for sport at low altitude and in conjunction with circuit-flying aircraft, they shall conform as best they can to the rules for normal circuit flying.

## 7. SPACE MODELLING

**When operating space models MAAC members will adhere to the following:**

1. **CONSTRUCTION:** I will always build my model rocket using only lightweight materials such as paper, wood, plastics or rubber without any metal airframe components. My model will include aerodynamic surfaces or a mechanism to assure a safe, stable flight.
2. **MOTORS:** I will use only commercially available model rocket motors approved by Explosives Regulatory Division Natural resources Canada for model rocketry. I will never subject these engines to excessive shock, extremes of temperature, nor will I ever attempt their refilling or alteration. I shall always employ recommended manufacturer handling and ignition procedures.
3. **IGNITION:** I will only install igniters at the launch site immediately prior to launching my model rocket. If using an onboard electrical system to ignite additional motors in a staged and or clustered model rocket, I will provide a safety system consisting of a removable pin or key that disengages the onboard electrical system of the model until such time as the key or pin is removed. I will remove this pin only after the model has been properly placed on the launch system. Upon recovery, or after an aborted launch, I will reinsert the pin or safety key until such time as any remaining motors are removed from the model and the firing systems is discharged. I will affix to the safety pin or key a length of streamer with the words "REMOVE BEFORE FLIGHT" printed legibly on the streamer.
4. **RECOVERY:** My model rocket will always use a recovery system to return it safely to the ground so that my model rocket may be re-flown. I shall prepare the recovery system with due care to assure that it will properly deploy.
5. **WEIGHT & IMPULSE LIMITS:** My model rocket will not weight more than 1500 grams at lift-off, and the model rocket engine(s) will contain no more than 125 grams of propellant and produce no more than 160 N-s combined total-impulse.
6. **FIRING SYSTEM:** I will always use a remote electrical system to ignite the model rocket engine(s). My firing system will include an ignition switch that returns to "off" when released and a safety interlock to prevent accidental ignition. I will never leave the safety interlock key in my firing system between launches.
7. **LAUNCH SYSTEM:** My model rocket will always be launched from a stable platform having a device to initially guide its motion. My launcher will have a jet deflector to prevent motor exhaust from directly contacting the ground. To protect others and myself from eye injury, I will position the launch rod or rail so that the upper end is above eye level, or else I will place a large guard on the upper end between launches.
8. **LAUNCH SITE:** I will never launch my model rockets near buildings, powers lines or near air traffic. Whenever possible, I will launch from locations 9 km or more from any airport. The minimum distance across the launch field in any direction shall be a minimum of  $\frac{1}{4}$  of the highest altitude to be flown. A minimum distance of  $\frac{1}{3}$  is





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recommended. The area immediately around the launch system will be cleared of any flammable materials. I will always obtain the permission of the launch site owner prior to using the launch site for my model rocket activities.

9. **LAUNCH CONDITIONS:** I will never launch model rockets in winds greater than 35 km/h. I will never launch my rockets in conditions of low visibility or clouds, which may impair the observation of the entire flight of my model rocket. I will never launch my model rockets in a direction below 30 degrees from the vertical.
10. **LAUNCH SAFETY:** I will remain at least 5 metres away from any model about to be launched. I will always announce to persons within the launch site that I am about to launch my model rocket and I shall give a loud countdown for at least 5 seconds duration. I will never launch a model rocket while any low flying aircraft are visibly approaching my launch location. I shall immediately remove the safety interlock key from my firing system after the launch of my model rocket.
11. **MISFIRES:** In the event of an ignition misfire, I shall not immediately approach my model rocket, but remove the safety interlock key and remain back for a safe period until assured that no ignition will occur.
12. **ANIMAL PAYLOADS:** I will never endanger live animals by launching them in my model rocket.
13. **TARGETS:** I will never launch my rocket so that it will fall on, or strike, ground or air targets. Nor will I include any explosive or incendiary payload.
14. **HAZARDOUS RECOVERY:** I will never attempt to recover my model rocket from a power line, high place, a tree or other dangerous location.
15. **PRE-FLIGHT TESTS:** Whenever possible, I will always test the stability, operation and reliability of my model rocket designs prior to flight. I will launch unproven designs in complete isolation from other persons.
16. **PERSONAL CONDUCT:** I will always conduct myself in a responsible manner, conscious that the maintenance of safety for others and myself rests with my ability to design and construct sound working models and to enthusiastically abide by the MAAC Model Rocket Safety Code. I will abide by the decisions and follow any instructions of any designated Range Safety Officers (RSO) and any person designated by the RSO such as a Launch Control Officer (LCO) that may be supervising a launch.