

The MACI Code of Safe Practice

The following is designed to provide a minimum set of guidelines for members to ensure their own safety, the safety of other members and of the public. It should be noted that it forms the basis of the questions used by examiners in the A/B “Certificate” scheme.

The code applies to both Fixed wing and Helicopter types. Specific reference to helicopters are preceded by (H).

Section 1: Before setting out for the field

The following checks must be completed.

1. Is the propeller the correct size for the model? Too small a prop can result in the engine over revving, while too large a prop places excessive loads on the engine. It should be free from nicks and other damage, and properly balanced. Otherwise a prop may be shed when rotating at high speed. An unbalanced prop can lead to excessive vibration in the airframe, giving rise to many problems from radio failure to bits falling off the airframe. When a spinner is fitted it should not exert pressure on the blades on the propeller. It may be necessary to cut away the spinner where it wraps around the blades to prevent contact.
(H) Check that all rotor blades are in good condition, with no obvious damage. Check mounting bolts and blade clamping area for security. Blades should be balanced.
2. Are the engine and silencer securely mounted? Even in the best constructed model there is some vibration present. The vibration has the effect of loosening the screws, allowing bits to fall off. Locking washers or locking compound should be used on all critical screws and nuts.
3. Are the receiver and transmitter batteries fully charged? A discharged battery will result in total loss of control, and loss of the model. Partially discharged batteries may appear to function correctly while operating the model on the ground, but when the model takes off and the distance between transmitter and receiver increases loss of control may be experienced due to range problems. Hence the importance of range checks. The types of cell used in most r/c equipment (Ni-Cad) have discharge characteristics where they operate normally when discharging and then without warning go flat. A full 16 hour charge is needed before a flying session. One must be particularly wary of old batteries, or equipment laid up for a number of years. It is a false economy not to replace all such batteries. The aerial also needs to be properly installed, not looped around itself, and exiting the model to allow the maximum length outside. It is recommended that it be tied to the tail fin securely. Range checks should take place before flying any new model, when any equipment is first used after an accident, or when any equipment is changed in a model. The model should be range checked on the ground with the engine running, the transmitter aerial down, and signal checked from a distance.
(H) All radio equipment must be well isolated from vibration by foam insulating pads or similar. Aerial must be affixed in such a way as to prevent chafing on any part of the frame or entanglement with rotors.

4. Has the centre of gravity been checked and adjusted where necessary? This balance point of a model has a major effect on the stability of a model. If it is too far back the model may be so unstable as to be uncontrollable. A forward CG will normally result in a more stable model. The desired balance point should be indicated on the plan or instructions, which came with the model. If it is not as indicated it must be adjusted, preferably by moving existing equipment, for instance the receiver battery pack forward or aft, or, if this is not possible, by adding weight to the nose or tail.
- (H)** The model should hang level or nose forward when lifted by its flybar.

5. Are all the control surfaces and hinges secure? Do they move in the correct directions? Looking at a model on the ground it is difficult to imagine the stresses and forces on the airframe and surfaces in flight. Try putting your hand out the window of a car travelling at sixty miles per hour, and feel the force of air striking your hand to appreciate the effect on a model. For this reason it is imperative that all control surfaces are well secured. Hinges should be well glued and pinned where necessary.
6. Are the control movements correct? Elevator controls pitch, aileron controls roll, and rudder controls yaw on an aeroplane. It is vital to check that all the surfaces move in the correct direction and that the amount by which the surface moves is appropriate for the particular surface and model. An experienced modeller should always check this aspect of the model set-up.
(H) Particular attention should be given to “gyro direction”.
7. Does the engine stop when the stick and trim are fully back? Apart from the fact that it is normally necessary to be able to stop the engine for landing, it can also be useful at other times. For instance during a test flight if the model is virtually uncontrollable, stopping the engine can slow things down enough to make flying manageable, and allow the model to be landed “dead stick”.
8. Are all the linkages secure? Plastic clevises split easily, and detach from the control horn or servo arm. The clevises should be screwed on to the threaded end sufficiently far to ensure adequate grip. When cables are used the outer casing must be securely supported at both ends.
(H) Check all links for stiffness or looseness, replace links on an ongoing basis as necessary.
9. The following mechanical checks should be made; loose or missing nuts or bolts, fuel tank and piping secure.
(H) Check for excess backlash in the gear chain, and that the gyro is securely mounted.
10. Has the model got its MACI Registration number attached?
If the model exceeds 2.5 m wingspan or 7kg weight a permit is required.

Section 2: On arrival at the field.

1. Check flight line /pits/parking arrangements and park your vehicle accordingly. The flight line must not over fly the pits or the parking area. The pits area must be chosen taking into account the direction of the wind.
2. Are the weather conditions suitable for the model, and for the experience level of the pilot? Wind condition and visibility must be taken into account.
3. Do not switch on the transmitter. Twenty six channels are available, (numbered 60-85) but only one model at a time may use any given channel. Switching on a second transmitter on the same channel will result in interference to the first

model, with potentially disastrous consequences. Check which control system is in operation (usually called a pegboard) and comply with these rules at all times.

4. As an added precaution call out your channel number aloud a few seconds before switching on to alert other pilots to a possible clash.
 5. Ensure that the wings are properly secured to the fuselage. If bands are used ensure that they are of sufficient quality and quantity. A minimum of six is recommended.
- (H)** Check for secure mounting of the canopy and boom clamps.

Section 3: Starting the engine

1. Have someone trustworthy to hold the model securely.
2. Ensure that all leads, tools, clothes etc. are well clear of the prop.
(H) Before any attempt is made to start, it must be ensured that the transmitter's flight condition is "normal" and the throttle stick at "low". The model should be held by the rotor with one hand while starting with the other.
3. Ensure that nobody is standing in line with the prop disc. Any bystanders should stand behind the model to avoid danger.
4. If flick starting the engine, use finger protection.
(H) This does not apply.
5. When the engine has started perform all adjustments from behind the model.
(H) Adjustments should only be made with the clutch disengaged and while holding the rotor head firmly.
6. Ensure that the model is restrained at all time when the engine is running. Hold the nose of the model up to ensure that the engine will not lean out and stop.
(H) Ensure that the rotor head is restrained at all times while the engine is running in the pits area.
7. Models should be started, and adjustments made only in the pits area.

Section 4: Flying the model

1. The model must not be flown over cars, people, property, or any other area, which would constitute a hazard in the event of loss of control, or an engine cut.
2. "Dead stick" must be called out in the event of an engine failure to alert other fliers to give priority and to keep the runway clear.
3. "Landing" must be called clearly to alert others in the area.
(H) Applies to helicopters flying in the same airspace as fixed wing models.
4. All take offs and landings must take place into wind.
(H) This does not apply to helicopters.
5. Pilots should stand together when flying, with their backs to the pits area.
(H) Applies to helicopters flying in the same airspace as fixed wing models.
6. Last thing before takeoff, check all controls for correct movement and direction.

In an emergency the model is the lowest priority. Ditch, if necessary to avoid people, is the cardinal rule.