

HELICOPTER CLASSES

5.4.5 CLASS RCH1 - SCALE HELICOPTER CLASS RCH2 - SCALE HELICOPTER FLYING ONLY

5.4.5.1 General

All pertinent BMFA regulations with regard to model helicopters shall be applicable except as specified below.

5.4.5.2 Safety

- (a) Safety consideration of spectators, event personnel and participants shall be of primary importance.
- (b) All models shall be subject to a safety inspection at the discretion of the Contest Director.
- (c) A model judged to be unflyable due to a crash must be reinspected prior to reuse.
- (d) Dangerous flying or poor sportsmanship shall be grounds for disqualification.
- (e) All manoeuvres shall be flown in front of the safety line which extends to infinity. At no time shall the helicopter come between the pilot and the judges. Violation of these rules will be grounds for disqualification.

5.4.5.3 Model Requirements

The use of GPS stabilisation, self-level and auto hover functions is strictly prohibited and may not be fitted to the model. There shall be no limitation on other types of equipment that can be fitted to the helicopter with the exception. Metal main or tail rotor blades be used provided no aerobatic manoeuvres are flown.

No minimum or maximum weight limits apply to the scale categories- any model with a take off weight over 25kg shall be registered with the LMA, have been through the LMA's test flying procedure and paperwork with a certificate to fly shall be provided to the CD on the day.

Metal rotor blades are allowed to be used. BMFA rules on certificated metal rotor blades have changed.

5.4.5.4 Builder of Model Rule

It is the intention that the pilot shall also be the builder of the model. Second hand models are however allowed to be flown but it is the intention that the pilot does not purchase a model with the intention of a professional modeller building and adding detail to the model.

Each contestant shall only be permitted one (1) model entry.

Competitors are allowed to enter more than one category, but the same model should not be used for multiple categories.

5.4.6 Flying Only Class

Helicopter Scale rules apply to Flying Only class minus the static element.

5.4.6.1 Proof of Scale

Contestants shall present the following materials with the helicopter for static judging:

A published 3-view or more drawing.

Pictures, published or otherwise, pertaining to colour, markings and details.

5.4.7 Static Judging

Static judging will be undertaken at the flying site when possible. The model shall be placed on an elevated or rotating table.

Static judging will be undertaken by 2 or 3 judges.

5.4.7.1 The judges shall be allowed to approach the model but may not touch it.

5.4.7.2 The contestant shall be the only person to move the model and/or open any panels or doors for the judges to inspect.

5.4.7.3 The contestant shall have up to 5 minutes to show the judges any special features which appear on their model such as lights, or other working detail.

5.4.7.4 Static Scoring

A total of 300 points can be awarded per judge giving a maximum total of 900 points for static.

Entries shall be judged on the following aspects with the following maximum point values:

1. Fuselage (Maximum 50 points).
2. Cockpit (Maximum 50 points).
3. Landing Gear (Maximum 50 points).
4. Tail rotor (Maximum 10 points).
5. Main rotor (*Maximum 40 points). *Helicopters using a main rotor system that features a flybar to enhance flight stability will receive a maximum of fifteen (15) points unless their system replicates the full-size helicopter.
6. Craftsmanship (Maximum 50 points).
7. Finish & Markings (Maximum 50 points).

5.4.8 Flight Guidelines

The contest layout will be as per figure 1, with the pilot located behind a line nine (9) meters from the centre of the scale helipad.

5.4.8.1 The helipad shall be a 1 meter circle contained within a 3 meter circle, and all flights shall commence and end at the helipad.

- 5.4.8.2** The pilot shall stand in the pilots circle located nine (9) meters from the centre of the helipad. The pilot shall stand in this position during the entire flight.
- 5.4.8.3** Each contestant is allowed 3 minutes in which to start their model, transport it to the scale helipad, and test hover or perform adjustments as required. Heavy models or those with on board start systems may be carried to the helipad prior to the initial start, but only after the previous pilot has completely cleared the flight area. The contestant shall wait until the preceding competitor has completed their flight and shut down their model prior to starting and beginning the start time interval. Test hovering shall be done from the scale helipad. The helicopter may only be hovered up 2m, without practising manoeuvres and the model must not be rotated beyond 90 degrees left or right relative to the pilot. If the contestant is not ready after the 3-minute start time interval, they are allowed to complete their adjustments; however, their flight time will have started at the end of the 3-minute interval. Electric Models may only be made live on the scale helipad.
- 5.4.8.4** All models, except for those outlined in 5.4.8.3 shall be carried from the start circle to the scale helipad. Models shall not be flown from the helipad to the pit area.
- 5.4.8.5** Once the contestant or his caller has announced the start of his flight, he is not allowed to make any adjustments to the helicopter.
- Engine restarts after the flight has commenced are not allowed.
- 5.4.8.6** The manoeuvres shall be flown in proper sequence and away from the spectators.
- The maximum flying time is six (6) minutes beginning when the first manoeuvre is announced.
- 5.4.8.7** A flight shall be considered an official attempt once the contestant or his caller has indicated the flight has begun.
- All contestants may have two (2) official attempts to have their flight score counted, but if circumstances, such as weather and time, only permit one round, then the static score shall be added to the single round flight score for final classification. If no flight is possible due to weather, then the competition should be abandoned and if possible rescheduled.
- Once a flying round has commenced it must be finished on the same day, otherwise those flights already completed during that round shall not be counted.
- A competition cannot be classified on the static score alone.
- 5.4.8.8** All contestants shall be permitted to fly two (2) equal rounds as time allows or as directed by the Contest Director.
- 5.4.8.9** Contestants shall fly the same equipment that was static judged. Should part of the aircraft be damaged and replaced, that portion of the helicopter shall be re-judged.
- 5.4.8.10** Same rules apply to flying entrants (See above 5.4.6)

5.4.9 Scale Flight Plan

Each contestant will provide each judge with a flight plan. It should contain a description of the full-size type and its usages as well as the manoeuvres and order

they will be flown.

The routine should be considered an air display flight to demonstrate the type.

The routine should follow a logical flowing order.

Features such as firefighting, cargo drops and weapons releases are permissible.

Any ground equipment required must be prepositioned during the 3-minute start up time and removed immediately on shut down.

The pilot may enlist a helper and/or caller to position ground equipment.

5.4.9.1 Flight Judging

Each official flight will be marked as detailed below.

(a) Ten (10) Second Hover with Clearing Turns (Maximum 15 points).

(b) 45 Degree Climb Out or a scale climb out if the full-size type is not capable of a 45 degree climb such as early types of helicopters to a minimum of eight (8) meters. (Maximum 5 points).

(c) Translational Landing.

Minimum altitude of eight (8) meters the helicopter will begin a translational straight-line descent to a soft landing on the helipad. (Maximum 10 points).

The Pilot should arrest the descent just above the helipad and adjust position and may turn tail in before descending to land gently.

5.4.9.2 (d) Scale Freestyle 50 points for nominated manoeuvres and 50 points for 'artistic merit'. (Maximum 100 points).

For this section the pilot must give each of the judges a flight schedule which would consist of five (5) freestyle manoeuvres that replicate the style of the full size being modelled. A 2-4 minute allowance is given for this- see item 14.3.

The manoeuvres must be flown in a smooth manner with the start and finish of each announced to the judges by their caller.

Time to allow the judges to write down the score for each one should be allowed.

It is preferred the contestant performs unscored manoeuvres to allow this and keep the display flowing. The unscored manoeuvres should be listed on the flight schedule in order.

The take-off and landing must be at the start and end of the flight. The entire flight is to be judged for 'artistic merit' as part of the overall flight.

5.4.9.3 Auto Rotation Option

Should a contestant wish to end his/her flight with an auto rotation to the scale helipad instead of a translational landing, he/she may do so. If in the case of Internal Combustion or Gas Turbine powered models, the engine is to be kept running should the auto rotation need to be aborted.

5.4.10 Multi-Blade/Flybarless Bonus

Helicopters flying with a multi-bladed or flybar rotor head that is “scale to their particular machine” will receive a fifty (50) point bonus added to each round’s score. “Scale to their particular machine” shall be interpreted as a rotor head that matches the number of blades and flybar arrangement (if any) fitted to the full-scale prototype.

5.4.11 Flight Scoring

Each round’s flight score shall be the sum of the scores from the three judges. Maximum 130 points per judge totals 390 possible points per flying round plus any MultiBlade/Flybarless bonuses.

5.4.11.1 Official Score for RCH1 Scale Helicopter

The final score shall be the sum of the flight scores (if two or more flights are flown) plus the static score. In the unlikely event of a tie, the tie breaker shall be the highest single flying round score between the tied contestants.

5.4.11.2 Official Score for RCH2 Scale Helicopter Flying Only

The final score shall be the sum of the flight scores (if two or more flights are flown). In the event of a tie, the tie breaker shall be the highest single flying round score between the tied contestants.

SCALE HELICOPTER JUDGE’S GUIDE

5.4.12 Static Judging Guidelines:

5.4.12.1 Fuselage: Outline is compared to 3 views and documentation, panel lines, and rivets. Must provide documentation for maximum score. (Maximum 50 points.)

5.4.12.2 Cockpit: Seats, belts, controls, instruments, consoles, map pockets, flooring, interior paint, etc. Match documentation for maximum score. (Maximum 50 points - Automatic zero for no cockpit.)

5.4.12.3 Landing Gear: Scale-like landing gear (skids or retracts). Match documentation for maximum score. (Maximum 50 points.)

5.4.13 Rotor Systems:

5.4.13.1 Tail rotor systems including blades. Match documentation for maximum score. (Maximum 10 points.)

5.4.13.2 Main rotor system including blades. Match documentation for maximum score. (*Maximum 40 points.) *Helicopters using a main rotor system that features a flybar to enhance flight stability will receive a maximum of fifteen (15) points unless their system replicates the full-size helicopter.

5.4.13.3 Craftsmanship: Items added, or modifications made to enhance the scale appearance of the helicopter. These items may be handmade, 3D Printed or obtained separately and could include lighting systems, aerials and antennas, non-skid surfaces, latches, handles, opening doors and hatches, interior detail, tie downs, etc. Match documentation for maximum score.

(Maximum 50 points.). Where 3D printed parts are used unless evidence of cad work should be provided otherwise maximum points for craftsmanship cannot be awarded.

5.4.13.4 **Finish and Markings:** Painting and nomenclature. Paint scheme should reflect actual paint used. A contestant may wish to use their own paint scheme. This is permissible but will incur a Minus 10 (-10) point penalty

Nomenclature could include registration numbers or maintenance and armament markings. Match documentation for maximum score (Maximum 50 points.)

5.4.14 Flight Judging Guidelines:

5.4.14.1 10 Second Hover with Clearing Turns: Lift off smoothly with the tail towards the pilot and hover stationary with undercarriage at eye level over the pad for a minimum of ten (10) seconds followed by a 90 degree Clearing Turn either to the left or right, hover for five (5) seconds, followed by a 180 degree turn in the opposite direction, hover for five (5) seconds. Subtract points for; incorrect hover altitude, hovering less than the minimum time, non-completion of clearing turns, erratic movements. (Maximum 15 points.)

5.4.14.2 45 Degree/Scale Climb Out: Following the final Clearing Turn the model shall perform a 45-degree Climb Out to a minimum of 8 meters. The pilot should perform the Climb Out so that the Judges have a good view of the model's angle of climb and altitude. Subtract points for, wrong degree of climb out, wrong altitude, erratic movements. (Maximum 5 points.)

5.4.14.3 Scale Freestyle: Scale Freestyle flight shall commence after climb out. The main objective is to demonstrate the flight capabilities & functions of the actual full-size helicopter, and all manoeuvres should replicate the type of helicopter being flown and its abilities. The pilot shall provide each judge with a description of his manoeuvres. The flight duration shall be a minimum of two (2) minutes, not to exceed four (4) minutes. Scoring will be based on smoothness, precision, realistic speed, and judges' impression of the overall presentation. Subtract for erratic movements, non-scale manoeuvres, non-scale speed, falling outside time constraints. The judges will award 50 points for technical merit in performing the manoeuvres and 50 points for artistic merit for presenting a sequence of manoeuvres which flows nicely and makes for a pleasing demonstration of the model's performance (Maximum 100 points.). ~~Judges must consider difficulties encountered in flying small size scale helicopters i.e. the greater effect weather conditions have on these models.~~

5.4.14.4 Translational Landing/Auto Rotation. At the end of the flight and at a minimum altitude of eight (8) meters the helicopter will begin a translational straight-line descent to a soft landing on the helipad. Maximum score is achieved when the touchdown is preceded by a minimum altitude stable hover before touching down. Subtract for incorrect starting altitude, erratic movements, rough landing, or missing the helipad. (Maximum 10 points.) Should a contestant wish to end his/her flight with an auto rotation, his/her caller must alert the judges prior to starting the auto rotation. The manoeuvre must be performed from a minimum starting height of 8 meters and the engine must be switched on throughout the manoeuvre. Lose marks for incorrect starting altitude, erratic descent, rough landing or missing the helipad.

5.4.14.5 Multi-Blade/Flybarless Bonus: Helicopters flying with a multi-bladed or flybarless rotor head that is "scale to their particular machine" will receive a fifty (50) point bonus added to each round's score. "Scale to their particular machine" shall be interpreted as a rotor head that matches the number of blades and flybar arrangement (if any) fitted to the full-scale prototype.

5.4.15 Site set up. Depending on the site, the scale helipad should be marked out in the centre of the fixed wing runway. The helipad should be 3 metres in diameter with the centre of the circle marked with a 1m circle. The pilot should stand in a 1m pilot circle situated 9 metres from the centre of helipad. The judges will be seated a further 6 metres behind the pilot. If 3 judges one will be directly behind the pilot but positioned to see the helipad. The caller should be positioned so as to hear the pilot and the judges hear him but not impede the judges' view. Layout as per Figure 1. (see below).

Figure 1



