

The 'B' Test

(a) Carry out pre-flight checks as required by the BMFA safety codes and demonstrate an understanding of 'SWEETS'.

The candidate must demonstrate their understanding of risk assessing a site for flying by talking through SWEETS as described in the Member's Handbook. A candidate must be expected to be able to demonstrate how they have come to the decision it is safe to fly at the location, which must still be applied even if the site is an established flying site.

The candidate must demonstrate the model's failsafe, which as a minimum should be set as 'throttle to idle' upon loss of control signal. The candidate must ensure this is done safely following the guidance in the Member's Handbook. A candidate must be failed immediately if the candidate does not make the model 'safe' by means of either a suitable restraint or removing components that might spin uncontrollably such as propellers or blades.

If the failsafe does not work when tested for any reason, then the test must be considered a failure.

The pre-flight checks are laid out clearly in the BMFA handbook. Ask the candidate to go through their checks as if the test flight was their first flight of the day. Particular attention should be given to airframe, propeller, control linkages and surfaces.

Points to look for are that the candidate has a steady and regular ground routine, especially when starting and tuning the engine. Nerves may play a part in the pits but you should satisfy yourself that the candidate is actually in control of what they are doing when preparing their aircraft for flight.

A neat ground layout makes a good impression and is to be expected from 'B' certificate candidates.

A poor performance in this area is not grounds for failing the candidate, however, it is inevitable that you will be making mental notes of all aspects of the candidate's competence and this is one that might have an effect on a real 'borderline' case.

Pay particular attention to the way the candidate uses the local frequency control system and make sure that they fully understand it and use the correct sequence appropriate to their model. For 35 MHz, this is usually 'get the peg, Tx on, Rx on'. For 2.4 GHz, the candidate should be aware of any local transmitter usage limitations and if a flight peg is required, it must be obtained before the usual Tx on, Rx on sequence. Some radio equipment and, occasionally, a specific model requirement requires that the Rx be switched on first and, if this is the case, the candidate should explain this clearly to you.

With electric powered models, take note that the candidate is aware that the model is 'live' as soon as the flight battery is plugged in and that they take appropriate safety precautions. If a separate receiver battery is fitted, the candidate should have the opportunity to check the operation of the radio equipment before the flight battery is plugged in.

Watch carefully and take note that the transmitter controls, trims and switches are checked by the pilot.

All candidates are required to be aware of the local the frequency control system and anyone who is required to use it but switches their radio on before doing so should be failed on the spot.

If there is no one else available then there is nothing to stop you aiding the candidate by holding the model for the power check, carrying it out for take-off etc. but any such actions must be performed by you directly on the instructions of the candidate. You must not prompt them or carry out any actions of your own accord.

The pilot must stand in the designated pilot area for the entirety of the flying part of the test.

(b) Take off and complete a left (or right) hand circuit and overfly the take-off area.

The model may be carried out to the take off position by the candidate or a helper or it may be taxied out from a safe position in front of the pits/pilot's area. **Taxiing out of the pits is an instant failure.** Prior to carrying or taxiing out, the pilot should inform other pilots flying that his model is going out onto the active area.

Take off must be performed with the model a safe distance from the pilot box area and on a line which does not take the model towards the pits, other people or any other danger/no fly area.

Take off should be reasonably straight with the model not being pulled off the ground too soon. It can be a point in the flyer's favour if, in the case of the take-off going wrong, they abandon it in a safe manner. It's far better that they think about what they are doing rather than try to coax a model with a sick engine into the air. If a take-off is aborted in a safe manner you should immediately reassure the candidate that they will not be penalised for taking correct actions, even though these may conflict with what the test requires.

Climb out should be at a steady angle and straight until operational height is reached when the model should be levelled, the throttle brought back to cruise power and the model established in the circuit.

The type of circuit is not stated so either racetrack, rectangular or circular is acceptable. This choice of circuit type applies to the rest of the flight as well except when a certain type of circuit is specified for a manoeuvre.

On completion of the circuit, the model will be flying into wind past the front of the pilot and, for safety reasons, just over the far edge of the take-off area. Tell the candidate prior to the flight the line that you want them to be following.

You must make sure that the candidate is clear on this, the line will be set by the model flying across in front of them on a heading which should be agreed before the flight (usually, but not always, into wind) and passing over a set point. This first pass in front of the pilot is extremely important as it sets the standard height and line for the rest of the test and this standard height and line will be referred to often in these notes.

(c) Fly a "figure of eight" course with the cross-over in front of the pilot, height to be constant. The examiners will expect this manoeuvre to be flown more accurately than the similar manoeuvre in the 'A' Certificate test.

Before commencing this manoeuvre, the pilot must check that the airspace is clear and announce his intentions to the other pilots as part of the manoeuvre will produce a flight path opposing the normal circuit direction.

The manoeuvre should be flown slightly better than required for an 'A' Certificate. The crossover point must always be in front of the pilot and, after a run in at standard height and line, the model **MUST** be turned through ninety degrees in the first turn so that it is flying exactly away from the pilot.

The first circle must also end with the model flying exactly away from the pilot, through the crossover point before it is turned into the second circle. Both circles should be of the same diameter as seen from the ground and this implies that they will be flown at varying bank angles.

The main problems with this manoeuvre nearly always happen on the first circle and if they do not get it right, they will either finish up with the crossover downwind, fly too near the pilot's line or panic as the model accelerates towards them as it begins to come downwind and pull far too much bank (vertical!) to get the crossover point correct. This is not a sign that they have thought about the manoeuvre or practised it.

The second circle ($\frac{3}{4}$ circle actually) is rarely a problem. The manoeuvre finishes, as in the 'A' certificate diagrams, with the model flying at standard height and line across the front of the pilot, not with another turn away.

(d) Fly into wind and complete one inside loop,

Run in height and line in should be standard and the manoeuvre should be performed exactly in front of the pilot. A perfect loop is not required but the exit height and line should be very close to the original.

Skewing out is a sign that the model has not been trimmed correctly or that the wings were not level at the start of the manoeuvre. The pilot should not get into this situation to start with but if they do then they must be able to compensate; if they cannot then you have to draw your own conclusions. Watch that the throttle is used during the manoeuvre and penalise the pilot if they fly the manoeuvre at a constant high throttle setting.

(e) Fly downwind and complete one outside loop downwards from the top i.e., a bunt.

The climb to an appropriate height for the manoeuvre should be executed neatly and, after tracking in on the standard line, the bunt should be executed directly in front of the pilot. A perfect bunt is not required but the exit height and line should be very close to the original.

Skewing out is a sign that the model has not been trimmed correctly or that the wings were not level at the start of the manoeuvre. The pilot should not get into this situation to start with but if they do then they must be able to compensate; if they cannot then you have to draw your own conclusions.

The throttle should be closed for the first part of the manoeuvre but don't expect it to stay off for too long. Many models will not complete this manoeuvre if throttle opening is delayed to the bottom of the bunt.

(f) Complete two consecutive rolls into wind.

These should be performed from standard height and line and must be continuous rolls with no straight flight between them. The model should be half way through the two rolls when it passes in front of the pilot although you may allow a little leeway here.

There should be no serious loss of height or direction during the manoeuvre although slight barrelling of the rolls is permissible. The speed of the rolls should be such that the pilot has to make noticeable elevator inputs to maintain the model's height.

'Twinkle rolls' that are so fast that no visible elevator input is required are **NOT** acceptable, you have to be sure that the pilot is using the elevator. Slow rolls which require elevator and rudder input are acceptable if the pilot can perform them but are **NOT** a requirement.

Don't forget to note which way the model rolls.

(g) Complete two consecutive rolls downwind using the opposite direction of roll rotation to that use in (f).

All the comments in (f) above apply but you can allow a little more leeway on the centring of the manoeuvre as the model will be travelling faster over the ground. You should, however, be satisfied that the pilot is making a reasonable effort to centre the manoeuvre. Make sure that the model rolls in the opposite direction to (f).

(h) Complete a stall turn either left or right.

This should be flown from standard height and line, but not positioned directly in front of the pilot. The model should be flown past the pilot for about 100 metres before the manoeuvre is performed, returning past the pilot at standard height and line when the manoeuvre is complete.

The position of the stall turn i.e. into wind or downwind, should be nominated by the candidate, but the stall turn itself must turn the model away from the flight line, i.e. if the wind is nominally from the right, the model is flown past the pilot from left to right, pulled up and stall turned to the LEFT.

Although you should not expect a perfect manoeuvre, it should be a recognisable stall turn, not a chandelle or a wing over. The 'vertical climb and dive' should be near vertical, the throttle

should be used in the appropriate manner and the model should not 'fly' over the top in a semi-circle.

(i) “Gain height and perform a three-turn spin, the initial heading and the recovery heading must be into wind and the model must fall into the spin (no ‘flick’ spin entry).”

The spin should be performed in front of the pilot but a little further out than the other manoeuvres. The height should be appropriate to the type of model being flown and the pilot should gain that height in a smooth and neat manner.

The model must be flown into wind and decelerated smoothly following a horizontal flight path, until the spin is entered at a point approximately in front of the pilot.

Ailerons may be used in the spin (and some models will not stay in a spin without aileron being used) but they must **NOT** be applied until the model has begun to fall. Note that this does not mean that the model must actually be **spinning** before the ailerons are applied but it must at least be **falling** into the spin.

A 'flick' entry, which is not allowed, will always result in one wing of the model **rising** as the manoeuvre is entered and part of the first rotation will take place in the horizontal plane instead of the vertical. In most cases it will then be very difficult to decide exactly when to start counting the turns of the spin, especially if the manoeuvre has been entered at too high a speed. Look carefully for all these points and insist on a correct low speed 'falling' entry to the manoeuvre.

After an appropriate time (depending on the model) controls must be centralised, any anti-spin actions taken (sometimes necessary) and the model recovered onto the same heading it had when the manoeuvre was started.

Allowances should be made for the heading of the model to be slightly off line (no more than ten or fifteen degrees) as the spin finishes but this should be corrected during the pull out. Do not accept a manoeuvre which requires more correction than this during the pull out.

If the pilot cannot take the model at least through the beginning of the spin in a competent fashion it is a sure sign that they have not practised the manoeuvre. If they make a good job of the entry but are not accurate enough on the exit, you might consider allowing another attempt at the manoeuvre as the spin can, on some occasions, be a difficult manoeuvre to predict, depending sometimes on the model as much as the pilot.

If the model shows a genuine inability to spin you should fail the candidate on the basis of attempting the test with an inappropriate model.

Do not accept any excuses from the pilot that his model is too fragile to spin; the section on the suitability of models applies.

(j) Fly a rectangular landing approach and perform a hazard avoidance go-around from below 10 ft. Note that this manoeuvre is an aborted landing for the purpose of collision avoidance, not a low pass.

The pilot should call landing and you should take note that he has visually checked the active area before and during the manoeuvre (watch for head movements). Watch out for the downwind leg not being flown parallel to the upwind leg and the turns being flown either too tight or too wide (most will try to fly them too tight and almost try to put a ninety degree 'snap' turn in, which is not a requirement). Throttle should be reduced either just before or just after the last crosswind turn with the crosswind leg descending into the turn on to final approach.

Once established on final approach, on line and descending, the throttle should be closed to idle to set up the final descent rate. The aim of all this is to have the model at a speed, position and rate of descent which will guarantee an accurate touchdown on the landing area. The manoeuvre is not a high-speed low pass or a touch-and-go. The Examiner should instruct the candidate when to initiate the go-around, which should be as the model passes below 10ft on the descent, but high enough to avoid it becoming a touch-and-go. When instructed to go-around, the pilot should call the manoeuvre out loudly, 'going around', 'overshoot' or other words

to this effect are acceptable. The model should be turned to an angle of 30 to 45 degrees away from the flight line, while simultaneously taken safely back up to circuit height, with appropriate use of the throttle as required to avoid a risk of stalling. Note that electric models are expected to follow typical 'i/c' flight patterns and that they can sometimes quite easily do that with propeller stopped. Don't be surprised if this happens, just take note that the flight path the model takes is what you would expect of an i/c model. These comments apply to the landing too.

(k) Fly a rectangular circuit in the opposite direction to that in (j) at a constant height of not more than 40 feet.

Before commencing this manoeuvre, the pilot must check that the airspace is clear and announce his intentions to the other pilots as part of the manoeuvre will produce a flight path opposing the normal circuit direction.

The comments above about parallel upwind and downwind legs and the type of turns required all apply. Height control should be good with no wavering and 40 feet is just over one house high.

(l) Fly a rectangular landing approach and land (wheels to touch within a pre-designated 30 metre boundary).

All the comments in (j) above apply. The visual checks of the active area are very important and as in (j) you should watch for head movement.

If the candidate opens the throttle and climbs away then they should have a very good reason, such as people on the runway. Any reasons offered by the candidate for an unscheduled overshoot cannot include not being lined up correctly or anything similar. At this stage they should be capable of getting it right.

(m) Complete the post flight checks as required by the BMFA safety Codes.

The candidate should agree with the examiner beforehand whether they intend to take the transmitter with them when retrieving their model or choose to leave it with a competent person. The candidate must explain the safety considerations behind their decision, which must be agreed with the examiner. If the candidate elects not to take the transmitter and no one else is available to hold it then you should offer. Whatever process is agreed, it must also be in accordance with any relevant club rules, as appropriate. Generally, for 2.4GHz operations and with suitable consideration, candidates should be able to give a robust safety-based argument for taking their Tx with them to recover the model, if it has landed on the normal landing/take-off area. Conversely, it is difficult to see how any such argument could be made for candidates using 35MHz or 27MHz equipment.

Remember that electric models must be assumed to be 'live' until the flight battery has been disconnected and the handling of the aircraft by the candidate must reflect this during retrieval and in the pits area.

The Questions

Having successfully completed the safety and flying elements of the test, the candidate, if they do not hold a current (post 1/1/2021) RCC must then answer correctly five mandatory questions based on legal compliance, as well as a **minimum** of five (A & BPC tests) or eight (B test) further supplementary questions on safety matters based on the BMFA Member's Handbook, associated Annexes, safety codes and local flying rules. Questions based on the Members Handbook Annex A (Flying displays) should only be asked for a B test.

Remember that on **no account** can a good performance on the questions make up for a flying test that you considered a failure. If you have failed the candidate's flying you should not even start to ask the questions. On the other hand, the achievement scheme is a test of both flying ability and knowledge. It doesn't matter how well the candidate can fly, if they cannot answer the questions they should not pass.

Mandatory Questions

The Achievement Scheme Review Committee strongly recommends taking the "on line" BMFA Registration Competency Certificate (RCC) in advance of the test.

This RCC test is updated in line with legal requirements, which helps to ensure all model pilots are both informed and current and is standardised for all candidates.

As a test candidate if you can evidence a pass of the latest RCC version to the examiner there will be NO requirement to answer the 5 mandatory questions.

From January 2021 it is a requirement of all tests that candidates who do not hold a current (post 1/1/2021) RCC must answer correctly 5 questions taken from the list of mandatory questions based on legal aspects of model aircraft flying. (See Appendix) The examiner should only ask 5 questions and if the candidate does not know the answer to any question the test must be considered as a fail.

The examiner should indicate on the test form, either, which questions have been asked or the date the Registration Competency Certificate was passed. The candidate should present with their Registration Competency Certificate, either as a hardcopy or electronically. (The certificate clearly shows the date it was passed)

It is expected that examiners will select questions that are appropriate to the test being taken, however candidates should familiarise themselves with all of the questions on the list. Candidates are not expected to be "word perfect" with their answers but they should be able to demonstrate that they are fully aware of the legal controls for model aircraft flying.

Supplementary Questions

How many supplementary questions you should actually ask will depend on the circumstances at the time. For instance, if the candidate has performed well on the flying elements and answers the first five questions (eight for 'B' certificate) with confidence then you need go no further. An acceptable flight performance with perhaps some rough edges can be offset to an extent by the candidate performing well when answering the questions.

A candidate whose flying performance you found only just acceptable and who hesitates on the questions should be asked a few more than the minimum five or eight, and if you are not satisfied that they familiar with the BMFA Member's Handbook and the associated Annexes and safety codes, you should not hesitate to fail them.

As an examiner, however, you should prepare yourself thoroughly for any testing that you do and you may wish to sort out your own personal and private list of sensible questions. Don't forget that you can use any local rules which you know and which the candidate should be aware of.

Remember that the majority of questions you ask are to be BASED on the BMFA Member's Handbook and the associated Annexes and safety codes; you are not expected to ask them 'parrot fashion' and the candidate is not expected to answer that way either.

This opens up the possibility of asking a candidate if they can think of reasons behind specific rules. For instance, why is the club frequency control system operated as it is and what might go wrong? or why should models not be taxed in or out of the pits area? There is always the possibility that the examiner may use the supplementary questions to further explore the candidates understanding of the mandatory questions.

Administration

There are specific forms for Examiners to use during the Fixed Wing tests, and if you do not have one then a call to the BMFA Leicester office will have some in the post to you by return.

For the Basic Proficiency or 'A' certificate, examiners must clearly indicate on the pass forms which certificate has been awarded.

Examiners must also indicate in the area provided which 5 of the mandatory legal questions have been asked or the date the current (post 1/1/2021) RCC was passed.

Completed forms should be sent to the Leicester office within seven days of the test and, whilst they must be filled in by the Examiner, they may be sent in to the office by either the Examiner or the Candidate. Pass forms can also be submitted online by examiners via the Achievement Scheme website at <https://achievements.bmfa.uk/> under the menu item "The Tests". Passwords for the Achievement Scheme Website form submission are available to current registered examiners from the BMFA Office. You should take great care that all the details are filled in correctly, especially the successful candidates **NAME** and their **BMFA number** (this can save a great deal of confusion). If the candidate is not a BMFA member then it is especially important that you get their name and address correct and in full.

This is very important as what is seen on the pass form is what will appear on the final certificate. It is embarrassing for you to have to send one back to be re-done and it gives the candidate a definite impression of sloppy work by someone.

Please note that the A4 Certificate(s) and updated membership card are not routinely sent directly to the individual tested. However, the Leicester office will send the documents directly to the individual, upon direct and specific request from the Examiner concerned.