



**BRITISH MODEL FLYING ASSOCIATION
THE R/C ACHIEVEMENT SCHEME**

**TEST STANDARDS for CHIEF EXAMINERS
and CLUB EXAMINERS
GUIDANCE for TEST CANDIDATES**

**THE 'A' CERTIFICATE
(FIXED WING)**

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General

The 'A' Certificate is a measure of flying ability and safety which "may be equated to a safe solo standard of flying" and an increasing number of clubs use it as their 'solo' test. As an Examiner, the level of competence you should expect of a candidate should be based on that criterion; that is 'is this person, in your opinion, fit to be allowed to fly unsupervised'.

A pilot capable of flying to 'B' certificate standards and wishing to go straight to the 'B' test without taking the 'A' test may do so but candidates should on no account be forced along this path. A flyer, known within a club to be a good pilot, going through the 'A' before taking the 'B' can be an excellent example to the rest of the club members and this should be pointed out to any candidate wishing to go direct to the 'B'.

The candidate should have studied the BMFA handbook and be familiar with the 'Safety Code for General Flying' and the 'Operational Guide, All Models and Radio Control'. Besides being an excellent guide to the safe flying of model aircraft, most of the questions asked at the end of the test will be from these sections of the handbook.

The Model

The test can be performed with virtually any powered fixed wing model, i/c or electric. It is not expected that the test will be taken with an electric powered glider, however, as the Silent Flight Electric 'A' Certificate would be more appropriate to that type of model.

The use of a gyro or autopilot is not allowed during the test. If any such system is fitted to the model it must be disabled during the test and you should check that this has been done.

Whatever model is brought by the candidate, it must be suitable to fly the manoeuvres required by the test they are taking. You do not have the authority to alter the required manoeuvres to suit a model and if, in your opinion, the model is unsuitable for the test then you should explain this to the candidate and tell them that they cannot use that model.

Hand Launching

The Member's Handbook states 'If, in the opinion of the Examiner the surface of the flying area is such that a rolling take-off would not be possible, hand launches may be permitted'.

The clear implication of this is that the candidate must turn up for the test with a model that is capable of taking off on its own undercarriage or from a dolly. If they bring a model that cannot take off from the ground then they may not take the test under the 'suitable model' requirements.

Note also that you 'may' permit a hand launch. It's just as likely that you 'may not', in which case the test will have to be postponed and taken in better circumstances.

Height and Speed

The 'A' certificate candidate should be a reasonably confident pilot, even though they may only have been flying for a few months. Flying too high is not the mark of a confident pilot. The test should be flown at a height of between 100 and 150 feet (that is roughly three to five houses high); any higher could be a sign of lack of confidence.

Intelligent use of the throttle is an important factor in confident flying and you should watch out for this. A pilot who flies at take-off power throughout the whole flight should not pass; they are not thinking.

Most electric powered models will have speed controllers that are capable of excellent throttle control. However, if a model is fitted with a very basic type of speed controller which is capable of little more than an on-off action, the comments about speed may not apply and you will have to make some allowances for the fact. Discuss this with the candidate before the flight.

Consistency

The combination of reasonable height and good use of the throttle should mean that the model will be flying at constant height throughout most of the test and you should note if the height flown varies significantly.

It is a requirement that "all manoeuvres are carried out in front of the pilot" with the implication that the model will be crossing in front of the pilot just beyond the take-off and landing area on several occasions during the flight. Care should be taken by the pilot that the line of approach each time is consistent and you should note if it is not.

Slightly varying height and somewhat inconsistent lines are not necessarily reasons to fail the candidate but they do give you a good indication of the pilot's general level of competence and could influence your final decision. Very poorly flown height or lines are a sure sign that the pilot has not practised the test and are a legitimate reason to fail them.

Continuity

Although the manoeuvres are set out in such a way that they can be flown one after the other as a schedule, this is **NOT** what is expected. The normal flight will have at least one positioning circuit between each manoeuvre and you should discuss this with the candidate before the flight. You, of course, should be watching any extra circuits just as carefully as the rest of the flight as they can tell you a lot about the competence of the flyer.

A pilot who transitions directly from one manoeuvre to the next is attempting to fly to a higher standard than required. This is quite acceptable if they are competent but watch out for the pilot who hasn't practised enough. Trying to fly the test in this way can get them into some very awkward positions.

Trim

It is expected that the candidate will start the test with a model that has been trimmed out previously but they should be able to trim the model out in the air if necessary. If you see obvious signs that the model is out of trim and the candidate does not make any attempt to rectify the matter you should seriously question their basic competence.

On the other hand, if they do need to re-trim and are making attempts to do so, you should make allowances for a short time of flight with a somewhat erratic flight path. This should not be penalised unless it puts the model in any danger or unless the model flies behind the pilot or in any other unsafe area.

Nerves

Quiet competence is what you are looking for during the flight but most candidates will be nervous and you should make some allowance for this. If the flyer is very nervous you should seriously consider abandoning the test for the time being and offering the candidate a coaching flight or two to settle them down before re-taking the test. This can be done on the same day and can really help those candidates who have trouble with nerves when flying in a test situation.

Repeating Manoeuvres

At 'A' certificate level the manoeuvres are simple and the candidate should be competent to fly them with very few errors. If you see any major faults the test should be taken again. It may be, however, that the candidate will make a **minor** mistake on a manoeuvre and if you are not fully satisfied with what you have seen you should consider asking for the manoeuvre to be repeated.

Some judgement is called for on your part here. A major mistake is grounds for failing the candidate, especially if loss of control has occurred or a dangerous situation has arisen. You should definitely not let them have two or three attempts at each manoeuvre until they get it right but you must give yourself the best chance of assessing the competence of the pilot you are testing.

You should consider what you have seen the model do and if you think to yourself "could be better" then a request that the manoeuvre be repeated may be considered. Be extremely careful about using this option, however, as you could very easily be degrading the worth of the test. It must not, under any circumstances, degenerate into a series of 'practice' manoeuvres.

Repeating the Test

The rules allow two attempts at the test in a day. If the candidate fails the first of these you must consider their performance in deciding what to do next. Many failures will be reasonably good pilots or they could be borderline cases. In these circumstances it might be appropriate to offer one or two coaching flights and then a repeat of the test. Remember that many of the candidates will be unfamiliar with flying under pressure and might do very well on the second test.

On the other hand, it will probably be obvious to you on many occasions that the pilot you are testing is simply not ready for the test they are taking. In this situation it is better that you tell them so quite clearly. It could then be extremely useful for you to offer to fly a demonstration test for them so that they can gain an idea of the standard of flying required, especially if they have shown a lack of understanding of the manoeuvres and positioning. This, possibly along with a little coaching, is far more useful to everyone than simply telling the candidate that they have failed.

Another possibility that may occur during a test is an engine failure part way through (other than during the intermediate power-on landing). The rules are that the test should be taken on 'one attempt' so if this happens you cannot let the candidate go up again and continue where they left off. In this case you should certainly offer them another test flight but make sure that they have had enough time to sort out what the problem was. Do not let them go straight into another test flight without having a proving flight so that you are both sure that the problem has been solved.

How they handled the first emergency might also be of great interest to you!

Designated Landing Area

Both the power-on and the deadstick landing have to be performed on the 'designated landing area'. The exact definition of this landing area must be left to the examiner as it will obviously depend on the flying site and possibly the weather conditions at the time of the test.

A point to bear in mind is that the fixed wing 'B' certificate test requires that the power on landing be performed with the 'wheels to touch within a pre-designated 30 metre boundary'. Any decision you make on the landing area for the 'A' test must obviously not be more restricted than this but if you feel that the site and conditions warrant some relaxation of this distance then it can certainly be allowed. However, the '30 metre boundary' does give you a useful starting point and one which you may feel comfortable with.

At your discretion you may allow a larger 'designated landing area' for the simulated deadstick landing than for the power on landing. If in doubt you should remember that it is not the intention to put the candidate's model in any danger but a good, controlled, into wind landing must be demonstrated. From 200 ft above the strip, however, it shouldn't be in the next field

It is very important that you discuss all this with the candidate before the test begins so that you are both in no doubt where and how big the designated landing areas are for both landings.

Helpers for Disabled Candidates, Young Candidates and Others Who have Requested Help During the Test

When disabled or young candidates present themselves for the test it may be that they will not physically be able to perform all the actions that most candidates can. At times, other candidates may also request help with certain physical aspects during the test (they may, for instance, have an injured finger). There will be times when you, as an Examiner, will think 'how much can I relax the test requirements for this person'.

Many Examiners make the decision to make no allowances at all but this effectively bars many people from attempting the tests. If we think of the achievement scheme as a true national scheme then we must consider how we can accommodate candidates, not how we can stop them from participating.

The answer, of course, is that you, as an Examiner, must make on-the-spot decisions about what you will allow during the test and, in such cases, you are within your authority to take such decisions. The guidelines set out below may help but at all times the three items at the end of this section must take precedence. They are not negotiable and mean that, whoever the candidate is, they have to convince you that they know what they are doing or what is happening for the full duration of the test.

For instance, a disabled flyer may have difficulty handling the model and may not be able to carry it out to the strip or retrieve it after the flight. The sensible use of a helper is certainly allowable in such cases but it is essential that they only do what the candidate asks them to do. Pre-flight checks and engine starting may be another problem area that can be overcome by a helper but you should expect the candidate to do as much of the work as possible themselves and they should be able to talk you through anything that the helper does for them. Be sure to discuss all this with the candidate before starting the test.

All of these comments can apply to younger flyers too but there is an added complication with engine starting. Many parents are very unhappy about letting their children near a running engine and will not allow them to start their own engines. This is a perfectly valid view and, again, is a case where a helper can be used. If this situation does occur with the younger candidates, however, you should insist that they do all the pre-flight and preparation work themselves, up to applying the starter to the engine. If they cannot do this then they should not pass.

After engine start, the helper can adjust engine controls and carry the model but only on the instructions of the candidate.

In all cases:

(1) If, at any time, the helper takes over the decision making process from the candidate then the candidate must fail.

(2) You can make no allowances whatsoever for anyone during the flying of the test. The candidate can either perform the flight manoeuvres as specified or they can't. If they can't then they must not be passed.

Make sure in your briefing that both the candidate and the helper are fully aware of both of these points.

The Test

(a) Carry out pre-flight checks as required by the BMFA safety codes.

The pre-flight checks are laid out clearly in the BMFA handbook. The candidate should also go through the pre-flying session checks, also laid out in the handbook. Ask the candidate to go through their checks as if the test flight was their first flight of the day.

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 but bear in mind that many 'A' certificate candidates will not have been flying for too long and you should be prepared to make allowances. A poor performance in this area is not grounds for failing the candidate, however, but it is inevitable that you will be making mental notes of all aspects of the candidates 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 understand it and use the correct sequence of 'get the peg, Tx on, Rx on'. Also watch carefully and take note that the transmitter controls, trims and switches are checked by the pilot.

Any candidate who switches their radio on before checking the frequency control system 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. Talk this over with the candidate in your pre-flight briefing.

If the test is being taken with an electric powered model then the candidate should show that they are familiar with the safe handling of such models.

In particular they must demonstrate to you the 'arming' sequence for their model. For safety reasons many speed controllers have a pre-programmed sequence of actions that have to be followed before the motor will respond to throttle stick movements. For instance, after switching on Tx and Rx and then plugging in the main flight battery, one type of controller requires that you move the throttle stick from low to full throttle and then back to low before the motor is 'armed' and ready for flight.

The candidate must be fully familiar with the system fitted to the model and should brief you on the system and demonstrate it working at some time during the pre-flight checks.

Generally, they must show that they are paying particular attention to the 'transmitter on - receiver on sequence and they must make you aware that they are treating the model as 'live' as soon as the flight battery is plugged in, no matter what arming sequence they may then have to go through

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

Take off must be done with the model a safe distance from the pits area and on a line which does not take the model towards the pits, other people or any other danger area. The pilot may stand where he chooses but if he stands out on the strip (behind the model when it starts its run) he should inform other pilots flying that he is going out onto the active 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 throttle should be brought back to cruise power, the model levelled out and the first turn of the circuit started.

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.

A manoeuvre flown as shown in the diagrams in the handbook will be more than acceptable and a lazy eight which is more 'stretched' will also be acceptable **BUT** the crossover point must always be in front of the pilot. This means that after the standard line and height run in, the model need not necessarily be turned through ninety degrees in the first turn so that it is flying exactly away from the pilot.

The difficult part of the manoeuvre is the first full circle and it catches many people out. Most inexperienced flyers will try to fly this circle with a constant angle of bank but if they do this in anything above a flat calm the crossover point will drift downwind from the pilot. The pilot should fly this turn with varying angles of bank (less at the start of the turn, gradually adding more bank as the model turns downwind) so that the crossover is in front of them and heading away.

If they do not get this right they will either finish up with the crossover way downwind, fly too near the pilots 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 manoeuvre finishes, as in the diagrams, with the model flying into wind across the front of the pilot at standard line and height, not with another turn away.

(d) Fly a rectangular circuit and approach with appropriate use of the throttle and perform a landing on the designated landing area.

The pilot should call this manoeuvre out loudly as a **LANDING** during the standard line and height initial into-wind pass across the landing area and you should take note that they have visually checked the active area before and during the manoeuvre (watch for head movements). The ability to glance away from the model to re-check that the landing area is clear is important and is a skill that a 'solo standard' pilot should possess

If a landing is called when there is anyone out on the landing area (for instance taking off or retrieving models) who may not be in a position to hear the call then you may consider that the candidate has not given due consideration to field safety.

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** required). 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 candidate should make appropriate use of the throttle to set up and control 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 a reasonably accurate touchdown on the landing area.

If the candidate opens the throttle and climbs away during the approach then they should have a very good reason, such as people walking out on to the runway. Any reasons offered by the candidate for an unscheduled overshoot **cannot** include not being lined up correctly or anything similar. However, if they do have good reason to perform an unscheduled overshoot and they handle the situation well then it would be fair for you to take this into consideration when summing up their flight.

If the test is taken with an electric powered model then you should be aware that 'appropriate use of the throttle' allows for different patterns of throttle use during the approach and landing and this will very much depend on the type of motor speed controller fitted to the model. With some controllers it is quite likely that the prop will be stopped at some points in the approach and also during the actual landing.

This is quite allowable but you must bear in mind that you are testing a rectangular circuit and power on landing so it is expected that the pattern flown by the model will equate closely with that which would be flown by an i/c powered aircraft.

If the engine stops during the landing the model may be retrieved and the engine restarted to enable the remaining parts of the test to be completed.

The candidate should NOT take their transmitter with them when retrieving their model and it should be left with a competent person. The transmitter should not be laid on the ground and if no one is available to hold it then you should offer. When the model has been retrieved and returned to the pits area the transmitter should be returned to the pilot.

If the landing was good, the candidate should give the model a quick visual check prior to restarting the engine and all the normal engine starting safety procedures should be followed, exactly as for the initial engine start.

Anything other than a good landing should mean that the candidate makes a more thorough check of the aircraft, possibly up to a full pre-flight check of the model if, for instance, it has turned over at the end of the landing run (which can happen even on the best landings).

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

If the engine remains running after the landing in (d), and the candidate is confident of their ability to do so, the model may be taxied back to the take-off point although this is not a requirement. If the engine stops during this manoeuvre the candidate should not be penalised and the normal retrieval and restart procedure should be followed.

If the model with its engine running is retrieved and replaced for take-off by a helper then it should be done with due regard for field safety. If no helper is available then you should offer to do this for the candidate.

The guidelines in (b) above should be followed for the take-off and circuit but the candidate must do a full power check of 'full and free controls' before taking-off and you should watch carefully for this. If they do not do this essential check then you should fail them.

(f) Fly a rectangular circuit at a constant height in the opposite direction to the landing circuit in (d) above.

Watch once again for parallel legs with reasonable turns and level flight. A common mistake is to turn on to the final crosswind leg (the upwind one) too soon. The result of this will almost inevitably be that the final turn of the manoeuvre will be too close to the pilot and may finish up as a 'panic' turn. Make sure that candidates give themselves plenty of room upwind, especially if the wind is at all strong.

(g) Perform a simulated deadstick landing with the engine at idle, beginning at a safe height (approx. 200 feet) heading into wind over the take-off area, the landing to be made in a safe manner on the designated landing area.

The manoeuvre does not specify any particular type of circuit so main thing to watch out for here is sensible circuit management with the model not being dived steeply or held off in too flat a glide. The pilot should do as many circuits as they feel comfortable with although this will very seldom be more than two. If there is any wind at all then they may be in trouble if they plan more than one. If they have not practised this manoeuvre it will be very obvious and if a safe controlled into wind landing is not achieved then the candidate should fail.

The pilot must call LANDING before they start the manoeuvre but watch carefully that they have visually checked the landing area before calling (look for head movements). They should be capable of taking their eyes off the model for a second or so in safety.

If the engine stops during the manoeuvre then the pilot should call DEADSTICK so that everyone will be aware that a genuine forced landing is taking place.

Pilots flying electric powered models are able to stop and start their motor at will and they have the ability to re-start their motor and climb away from a baulked motor-off landing if necessary. They are therefore able to safely perform a 'genuine' deadstick landing and this is what you should expect to see. They must, of course, call DEADSTICK immediately prior to starting the manoeuvre.

Be aware that many electric models will have propellers that sometimes 'windmill' on the glide. This is normal and acceptable and it should be obvious to you that no power is being applied to the propeller at the time.

(h) Remove model and equipment from the take-off/landing area.

The candidate should NOT take their transmitter with them when retrieving their model and it should be left with a competent person. If no one else is available to hold it then you should offer. When the model has been retrieved and returned to the pits area the transmitter should be returned to the pilot.

(i) Complete post-flight checks as required by the BMFA Safety Codes.

These are set out clearly in the handbook but you should watch particularly that the Rx off, Tx off, frequency system cleared sequence is followed correctly.

The Questions

The candidate then "must answer correctly a minimum of five questions on safety matters, based on the BMFA Safety Codes for General Flying and local flying rules."

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 safety questions they should not pass.

How many questions you should actually ask will depend on the circumstances at the time. For instance, if the candidate has done a good flying test and answers the first five questions with confidence then you need go no further. An acceptable test but with some rough edges can be offset to an extent by the candidate performing well in the first five questions.

A candidate who has done a test which you found only just acceptable and who hesitates on the questions should be asked a few more than five and if you are not satisfied that they have actually read the safety codes, you should not hesitate to fail them.

There is some debate as to whether a list of 'approved' questions should be published for examiners to use. Current opinion is that if such a list is published then candidates will also be able to study the list and will not need to study the BMFA handbook and this is probably not a good idea.

As an examiner, however, you should prepare yourself thoroughly for any testing that you do and you are encouraged to sort out your own 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 questions you ask are to be BASED on the BMFA 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?, why should operating transmitters not be taken out when retrieving models from an active flying area? or why should models not be taxied in or out of the pits area?

First Issue.

Ratified by Areas Council, October, 1994.

Second Issue

Minor Revisions Ratified by Areas Council, May 1997

Third Issue

Changes incorporating Intermediate power-on landing, ratified by Areas Council, 17th November, 1998 for implementation on 1st January, 1999.

Fourth Issue

Helpers, ratified by Areas Council, 7th February, 2004. Additional text covering suitable models and hand launching.

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