



# **FIXED WING 'A' CERTIFICATE RULES AND GUIDANCE NOTES FOR BOTH CANDIDATES AND EXAMINERS**

The ultimate aim of the exercise is to lead to an understanding of what is required to fly your model under your full control and in a safe manner. After which it is practice, practice, and practice.

**Happy Landings!**

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## 2 Certification Rules

### 2.1 The Model

The test can be performed by any powered fixed wing model, I/C or electric. It is not expected that the test is taken with an electric powered glider.

The minimum weight of the model to take the test should be 1kg without fuel but with batteries. The model must also be capable of taking off and landing from the ground on its own undercarriage.

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

Whatever model is brought by the candidate, it must be suitable to fly all the manoeuvres required by the test. The examiner is not allowed to alter any of the manoeuvres to suit a model. If in the examiner opinion the model is unsuitable for the test being taken, then the examiner should explain to the candidate that he/she cannot use this model for the test.

### 2.2 Buddy Box or Dual Controls

Training aids such buddy box/leads or dual control cannot be used during the tests.

### 2.3 Height and Speed

The 'A' Certificate candidate should be a reasonably confident pilot. Flying too high is not a good sign of confident pilot. The test should be flown at a height of between 100ft and 150ft (30m and 45m), any higher could indicate a lack of confidence.

Proper use of throttle is an important factor in confident flying and the examiner should watch for this. A pilot who flies at take-off power setting throughout the whole flight should not pass the test.

### 2.4 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**" which implies 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 to ensure that the approach path and flyby is consistent each time and major deviations from the intended flight line should be noted.

Slightly varying height and minor deviations are not necessarily reasons to fail the candidate but they do give a good indication of the pilot's general level of competence and could influence your final decision. Very poorly flown height or flight lines are a sure sign that the pilot still needs more practice and are a legitimate reason to incur a fail mark.

## **2.5 Trim**

It is expected that the candidate will start the test with a model that has been previously flight trimmed but they should be able to re trim the model 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 but still in the safe zone. This should not be penalised unless the model strays over or behind the pilot or in any other unsafe area.

## **2.6 Nerves**

Pilot competence is what is looked for during the flight and it is understandable that most candidates will be nervous and an allowance should be made for this. If the flyer is very nervous you should seriously consider abandoning the test for the time being and reassure the candidate by suggesting 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, within acceptable limits.

## **2.7 Repeating Manoeuvres**

At 'A' certificate level the manoeuvres are simple and candidates are expected to be competent enough to fly them with very few errors. If you detect any major faults the test should be postponed and re-taken. 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 may consider asking for the manoeuvre to be repeated there and then.

Major errors indicating lack/loss of control leading to a possible dangerous situation are grounds for stopping and postponing the test. You should definitely not let candidates make repeated attempts at each manoeuvre “until the candidate gets it right”.

You should consider what you have seen the model do and if you think to yourself "Could be better" than a request that the manoeuvre be repeated may be considered. **Be extremely careful about using this option**, however, as you could very easily be lowering the intended standard and objective of the test. The test must never, under any circumstances, degenerate into a series of 'practice' manoeuvres.

## 2.8 Repeating Test

Depending on the time availability, the test can be repeated not more than twice 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 repeat the test. 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 sometimes be obvious that the pilot you are testing is simply not ready for the test. In this situation it is better that you inform the candidate immediately and tactfully. It could then be extremely useful for you to offer to fly a demonstration test for them (assuming that a suitable model is available to you and that you are happy to do so) 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. Ultimately all candidates are urged to **succeed**.

## 2.9 Test Interruption

It may happen that during a test an engine failure part way through the flight can result in a forced landing and a damaged model. In this case the test is postponed and you should invoke the rule that the test should be performed in one flight and count the flight as one of the two attempts allowed during the day if the model is repairable. Genuine engine trouble or even engine-out situations during the test may be dealt with in one of three ways.

1. If the test was being generally flown in a satisfactory manner and the problem can be rectified quickly then the candidate may be allowed to continue the test from the start of the manoeuvre in which the problem occurred.
2. If the problem cannot be rectified quickly but you consider that it was a genuine unforeseen occurrence, you may annul the test and not count it as one of the two attempts as described in 2.8 above.
3. If the test up to the point of failure was not satisfactory, you have the option to cancel the rest of the test and count the flight as one of the two attempts allowed during the day.

Obviously, one will have to use one's judgement in that particular situation; however the manner in which the candidate handles the emergency should be a factor when you review the candidate's overall standard of flying.

## **2.10 Designated Landing Area**

Both the power-on and the dead stick landing have to be performed within the 'Designated landing area'.

1. This is around 45 meters from NW or SE of the runway.
2. Landing should preferably be straight down along the runway as possible.
3. Landing should be close to or on the centreline of the runway (not more than 20m away from centreline is allowed, this is depending on the weather conditions).

A larger „designated landing area“ could be allowed for the simulated dead stick landing than for the power on landing. This manoeuvre is not intended to endanger the candidate's model but a good, controlled, into wind landing must be demonstrated. From 200 ft. above the strip, the aiming point should be the centre of the runway. It is imperative to avoid any no fly zones and other areas of risk on the approach.

It is very important that this strategy is discussed with the candidate **before** the test begins to avoid any doubt as to where and how large the designated landing areas are for both landings.

## **2.11 Helpers for Disabled Candidates and Young Candidates**

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'.

For instance, a disabled flyer may have difficulty handling the model and may not be able to carry it out to the strip, release it for launch 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.

## 3 Flying Test Part-1

### 3.1 Carry out pre-flight checks as required by the MMAFA

The pre-flight checks are laid out clearly in the MMAFA Standing Safety Regulations. 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, 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.

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. 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.

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 and receiver switch 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.

The pilot must demonstrate the correct function of the failsafe, where appropriate, before committing to the flight.

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

### **3.2 Take-Off into the wind**

Take off must be done with the model at a safe distance from the pits area and on a flight line AWAY from the pits, other people or any other danger area or no fly zone.

Take off should be reasonably straight with the model not being yanked 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 cut the throttle and abort the take-off in a safe manner. It's far better and safer to keep a cool head and think clearly and abort 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 to a safe 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 as long as it is consistent throughout the flight 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, towards the far edge of the take-off area. Inform the candidate prior to the flight the flight line that you wish them to follow.

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.

### **3.3 Fly a 'figure of eight' course**

The model is flown on the standard line and height into wind over the landing area, a  $\frac{1}{4}$  circle turn away from the pilot is flown so the model is directly in front of the pilot and briefly flying directly away from the pilot, a full circle in the opposite direction is flown bringing the model back to in front of and heading away from the pilot, a  $\frac{3}{4}$  circle is then flown in the opposite direction to the full circle. The manoeuvre ends with the model flying into wind across the front of the pilot following the original direction of entry and height, not turning away.

### **3.4 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.**

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).

### **3.5 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 (3.4), 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.

### **3.6 Fly a rectangular circuit at a constant height in the opposite direction to the landing circuit in (3.4) above**

Before commencing this manoeuvre, the pilot must check that the airspace is clear and announce his intentions to the other pilots, as the manoeuvre produces a flight path opposing the normal circuit direction. Any initial turn to position for this manoeuvre shall be away from the pilot box area.

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

### **3.7 Perform a simulated dead stick landing with the engine at idle, beginning at a safe height (approx. 200 feet) 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 the main thing to look 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 their 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.

### **3.8 Remove model and equipment from take-off/landing area**

At this stage part 1 of the flying test is finished and the model must be retrieved from the live runway or taxied back to the PITS area.

## 4 Test Part-2 Questions

The candidate then "must answer correctly a minimum of five questions on safety matters, based on the MMAFA Safety Codes and Local Standing Regulations for General Flying".

NOTE: Since a good score on the questions section cannot **on any account** make up for a bad flight score the examiner need not continue the questions section of the test if the flight score proved negative. On the other hand the 'A' Certificate scheme is a test of **both** flying ability and basic flight safety knowledge. It doesn't matter how well the candidate can fly - if they cannot answer the safety questions satisfactorily they should not pass. Examiners should not hesitate to ask a candidate to retake the certification test for any /all of the above reasons in the candidate's own interest **as this could actually be helping to avoid an accident just waiting to happen.**

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