

'B' Prepared



ANDY ELLISON IS BACK TO CONSIDER THE FIGURE OF EIGHT AND THE INSIDE LOOP

Instruct your helper at all times throughout the test to prove that you're in command of what's going on.

It's worth spending a little time getting your engine tuned correctly, before you take the test!



Last month we'd just completed the pre-flight checks in front of the BMFA examiner, started our engine and done a lean check to make sure the engine's needle settings were correct.

Expanding on the practice of making all safety checks obvious so the examiner knows you've done them, you now get your model onto the runway for take-off. Your helper (who could even be the examiner) should be holding the model and you should be clearly telling him what you want him to do.

Be very clear that you do not want him to point the spinning propeller

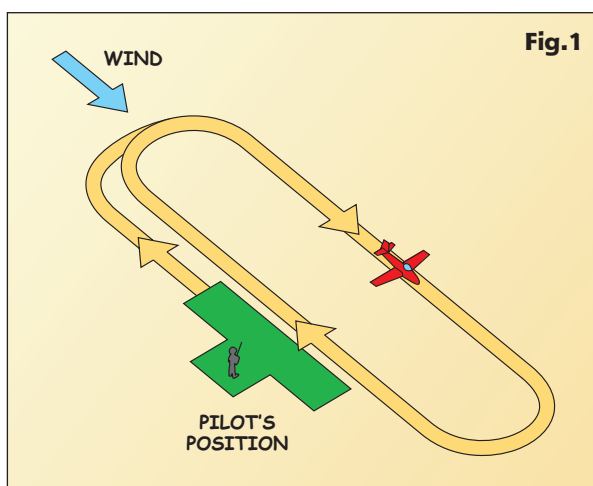
at anybody and, following your club rules implicitly, you should make your way to the runway area. It is best to avoid taxiing the model unless it's hard to do otherwise. Make sure you use whatever means are required locally to get permission from other pilots to enter the runway area and ensure that your model is placed on the ground and into wind on a line that will not take it towards the pit area or indeed, people or areas stipulated in local rules. You can stand behind your model if you wish but remember that the runway on which you are now loitering is an active area and you should inform the other pilots that you are on it for a prolonged length of time. If you can take-off without standing behind the model, you should do so.

Okay, let's look at the test requirement for this stage:

b.) Take off and complete a left- or right-hand circuit and over fly the take-off area. With a final check to make sure there are no obstructions waiting to thwart your take-off effort, you should proceed and get the model into the air. If a helper is holding it for you then be sure to let him know what you want him to do and again remind him not to assume that he knows what you want.



The take-off should be smooth and straight, don't pull the model off the ground too soon. Abandoning a take-off for any legitimate reason isn't grounds for a fail, so it's better that you demonstrate you're at least thinking about what you're doing rather than trying to persist by taking off with a sick engine, for example. Just ensure that if you do abort your take-off then you do it in a safe manner. Waving around in big 'S'



Don't fall into the trap of thinking that properly flown circuits are easy and don't require practice - they do!

bends all over the strip is hardly a demonstration of adequate control and unless you've experienced some level of mechanical failure, it is unlikely the examiner will consider it a legitimate reason and would count it as a used attempt.

Anyhow, since you're going to be successful, your climb-out should be at a nice shallow angle with no turning until you've reached the operational height for the test. Be careful here as this first circuit

will set the benchmark height. Remembering what we discussed last month you should be aiming to fly at no higher than 150ft but likewise not dangerously low. Your examiner will advise. You will note that this circuit can be flown either left or right handed. This will be determined by the 'circuit of the day' which governs the direction you need to turn after take-off.

Imagine yourself flying at a public display. Models take off parallel to the crowd line and the area from which the public are watching will be dead airspace. In order to avoid flying over them you need to make a turn that takes the model away from the flightline, along the back leg of the circuit and back round into the wind again. The scenario is exactly the same for the 'B' Certificate.

With the model at height you should level out and adjust the throttle to cruising speed. That is the speed at which most of your test will be undertaken and the airspeed at which you have previously trimmed your aircraft. You are given an option here. The type of circuit is not stated and can be either racetrack (as Fig. 1) or the less common rectangular circuit,

if you prefer. Even circular circuits are allowed but personally I don't like to see them. The key point of this first circuit is to set height and speed and to position the model at completion in front of the pilot and for safety reasons, just over the far edge of the take off area or over a point previously agreed with the examiner. 'Over fly the take-off area' rarely means down the centre of the strip (Fig. 1).

Bear in mind that this could conceivably be the first time an examiner has actually seen you fly and first impressions do count. Don't go haring around, it's better to buy yourself some time by extending the circuit at either end, perhaps more than you might normally do. This practice may at first feel quite uncomfortable especially if you're used to hanging around the strip, however the extra length to the circuit will give you added time to adjust height, speed and positioning for the start of the manoeuvres and also allow you a little relaxation time after their completion.

Your examiner may begin to discuss the next flight pattern as you progress around this circuit. It is quite common to expect an additional





circuit after finishing the first so as to allow you to position for the figure-eight to follow. You should not assume that you are going to go straight into it as you approach the take-off area unless prompted to do so by your examiner.

You should wait for his prompt at all times, if none comes in a timely manner you must revert back to the circuit of the day. Flying the larger circuits does give you a little time to digest what he's asking you to do and it also permits a little time to question him if there's any level of uncertainty about what he requires.

c.) Fly a figure-of-eight course with the cross-over in front of the pilot, height to be constant.

You could be forgiven for wondering why the first part of the test mimics the 'A' certificate so closely. There is of course a figure-eight requirement in the more basic test but here it must be flown much more accurately.

You already set the height and speed for this flight pattern when you completed your first circuit and these should be repeated without significant deviation here. Where the 'A' certificate figure-eight can be

lazily flown across the patch with almost diagonal intersecting lines, it is perhaps best to view the 'B' Certificate figure-eight as two opposite-hand circles of equal diameter touching each other at a point on their circumference coinciding with a point along the centreline in front of the pilot. In short, the model must be turned to 90-degrees away from the pilot in the first turn so that it is flying exactly away (Fig. 2).

To fly the figure-eight correctly, it is vital that you get a picture of what it will look like in your mind's eye, where you will enter and exit, but more importantly, exactly where that crossover point will be. You should also be able to maintain a steady height throughout the manoeuvre. Incidentally, many, many pilots cock-up the intersection and switch to the opposing turn too soon leaving them with little depth to fly the remainder accurately. It is here that most of the mistakes are made, indeed doing this will affect the remainder of the flight pattern.

The examiner will be watching the first 90-degree quadrant intently and mentally noting its size, height and the speed at which you fly it. Many

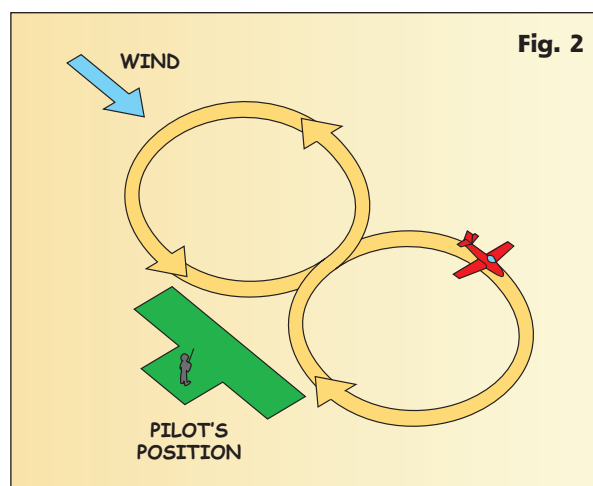


Fig. 2

examiners will stand immediately behind the pilot for the figure-eight, some even holding up a pen at the point where the completed first circle should intersect the primary arc as the model comes around. Obviously then the full circle should also end with the model flying directly away from the pilot. You should avoid immediately switching to a tight bank for the remaining 270 degree arc as soon as you hit the intersection. As mentioned above, fly through and deep enough to avoid a snap turn when you get the model back to the start point.

The finish should be at the point where you started your first 90-degree turn with the model flying at standard height and line. Obviously the angle of bank throughout the figure eight will need to be constantly adjusted to allow for wind strength. A windy day will mean shallow turns on the into-wind sections and tighter turns for the downwind parts to ensure that you hit the key intersections. As good as you may think you are, hitting the intersection

The height of your figure-eight should be constant, with the crossover in front of you.

If a glow plug is going to fail then it'll be just before your test - be prepared!





It matters not whether you stand behind your model for take-off.

Be aware that the examiner will be giving you instructions throughout the test. In this respect it pays to fly larger circuits so you've time to digest and act on them.

and starting point on a windy day is tricky and will need practice in order to pass. Your examiner can make no allowance for the wind strength during the figure-eight circuit.

The next manoeuvre is the inside loop but you're not expected to go straight into it after completion of the figure-eight as your model will probably be too close and considerably out of position. You can take a circuit now to re-position for the loop and I recommend you do so to slow the pace and give yourself time to prepare.

d.) Fly into wind and complete one inside loop. The inside loop is a perfect example why flying an accurate test flight is so tricky. The quality of the manoeuvre is secondary - you'll still have to do a good one of course but the examiner will be much more concerned with an accurate entry position at the correct line and speed whilst watching to see that you're close to the height and line of entry on completion.

If your model can loop without skewing out then it's a good sign that you've set it up correctly, that lateral balance imperfections are not evident, and that you started the loop with the wings level. If an error does start to occur, your eagle-eyed examiner will be looking for adequate adjustments to be made and will pay special attention to the correct use of throttle throughout. You will be required to demonstrate an increase of power for the climb part of the loop but not too early, i.e. not on your approach the manoeuvre. Again, this manoeuvre has to be performed in front of the pilot and you should make sure that no corrections to line are required as you run in.

As you approach a point perhaps 45 degrees to your side and heading for the centreline in front of you, you should increase power whilst avoiding any change in pitch that the extra airspeed brings. Allow the speed to build holding your height and line and get a good mental picture in your mind of the loop you are about to fly. Do not try to make it too big as if to impress your examiner with the mighty power of your model! Fly the manoeuvre you have been practicing and concentrate on getting it reasonably round, holding the line over the top and exiting at the correct point.

Anticipate the application of up elevator to ensure that the centre of the loop is at a point directly in front of you at or near to the crossover point you established during your figure eight circuit. As your model nears the vertical try to take a millisecond or so to view its progress objectively. Are any corrections needed? Will you perhaps need to apply rudder to regain the line? Take careful note of the height and size of

this manoeuvre as it will be used as a benchmark by the examiner and this alone is reason enough not to make it too little or too large. Just because your fun fly or 3D model will do a 6ft loop doesn't mean that this is what your examiner wants to see!

As the model reaches the top, check again for wing drop and reduce the power of the motor to at least a quarter. Only go to tick-over if you are still carrying plenty of inertia as to do so has the effect of slowing the model and making the loop look balloon shaped - not in itself a failure, but you do want it to look reasonably accurate, don't you? Once over the top, all you need to be concerned about is re-establishing that all-important entry height and line. Bring in a little power as you come around to level flight again and exit at cruising speed on the correct line.

TIME'S UP!

Right, next month we'll gain height and fly the dreaded bunt! Meanwhile, keep reading your BMFA handbook and don't stop practicing!



Only a handful of flyers are born with any natural ability. For the rest of us the only solution is practice, practice and practice.