Dumfries Model Flying Club

A Guide for Beginners

Contents

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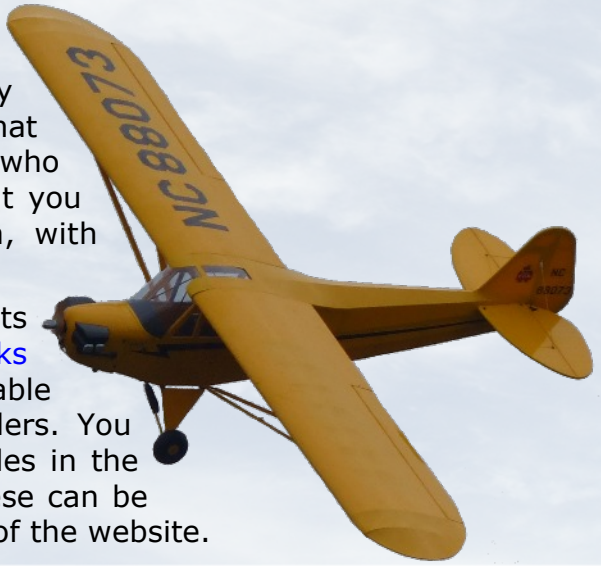
How soon can I get flying?

Initially it is best not to be in too much of a hurry. You are starting on not one, but several learning curves, because radio-controlled model flying involves several different knowledge and skill sets. Those who are in too much of a hurry to put a model into the air at the beginning are much more likely to put it into the ground. Doing that a few times can get very expensive.



It is much better to exercise a little patience at first. Visit the Club flying site a few times and talk to the members. Have a look at the different models they fly. Look at their choice of transmitter. Watch what they do. Ask a lot of questions. Talk to those who recently went through the same learning curve that you are about to embark upon. What do they wish, with hindsight, they had done differently?

Also, be sure to download and read the two booklets published by the BMFA and depicted on the Useful Links page of the DMFC website. Both are full of invaluable information for both new and experienced aeromodellers. You will also need to read and understand the Club Rules in the context of your visits to the DMFC flying field. These can be viewed and downloaded from the Club Details page of the website.

What will I need to buy?

Don't be in too much of a hurry to buy stuff either. There is a huge range of options to consider, and choosing carefully and wisely can save you a lot of disappointment as well as a lot of money. The advice of experienced club members is invaluable at this stage. However don't expect everyone to give exactly the same advice, as some opinions can be highly subjective. At some stage you'll need to weigh up the advice you've been given and do a bit of research and homework of your own.

Online aeromodelling forums can be helpful here, and you'd do well to thumb through a few copies of some aeromodelling magazines and browse the websites of a number of different model shops and suppliers. The Useful Links and Resources pages of the DMFC website are full of online resources you can learn from.

But of course there are things you will need to buy, and these fall into two distinct categories:

1. Items you will only need to buy ONCE - *provided you choose wisely*
2. Consumable items, and in this category we will include model aircraft because over time you will undoubtedly buy several, either because of loss or damage, or because as your skill develops, you will want to fly more challenging models

Your biggest and most important purchase will be the Radio Control Transmitter (often abbreviated as **TX**). There are many different brands and specifications on the market, and this can seem bewildering at first. The two most popular brands amongst DMFC members are Futaba and Spektrum. If you choose wisely your transmitter can last you for many years. Buying in haste is not to be recommended and buying cheaply can be false economy.

When you start learning to fly it is highly desirable to be able to be helped through the early stages using a buddy-lead system. Buddy-lead is a dual-control system just like in a driving-school car, and it really can save you a lot of expensive crashes in the early stages of learning to fly by radio-control. The trainee can do as much flying as they are capable of, but the tutor can intervene and take control if necessary to try to avert a disaster.

However buddy-lead systems generally require that the tutor and trainee are using the same brand of transmitter. It is therefore a good idea to find an experienced pilot who is willing to teach you and only ***then*** purchase a transmitter of the same brand (and Mode - see below) that your tutor has, so that you can benefit from this dual control system.

If your tutor doesn't have a buddy lead cable you may need to purchase one yourself; (the latest Spektrum models have a wireless buddy system which eliminates the need for a physical cable).

Don't be tempted to buy a cheap or low specification transmitter - it will be false economy because you'll soon wish you had something better. Also remember that each of your models will need a receiver (often abbreviated as **RX**), and generally speaking these are specific to the brand of transmitter, (receivers are not cross-compatible between brands), and the cost of receivers varies considerably between the different brands. You may only need one transmitter, but almost certainly you will eventually be buying several receivers as time goes on.

To begin with, a 6-channel Transmitter will probably be perfectly adequate and you are unlikely to outgrow its capability for some considerable time. Get one with a stop-watch timer on it, and ideally a count-down timer too, because you will need to keep track of flight time so that you don't run the battery too low and end up with no power. Some transmitters can even talk to you, giving verbal alerts to things you need to know while flying or preparing to fly, and some bind each model memory to a specific receiver with the significant safety benefit that you cannot accidentally try to fly a model with the wrong model's settings.

The most important thing to specify when buying a transmitter is the **Mode**. Although some transmitters can be switched between modes, not all can, and it often involves opening the the case to get to the motherboard.

The Mode determines how each of the control sticks functions. The most common mode in use in the UK is **Mode 2**, and this is the mode used by almost all members of DMFC. The reason it is important to specify Mode 2 when buying a transmitter is so that your fellow club members can assist you and be of direct help when you are learning to fly. In Mode 2 the left stick controls the throttle (up/down) and the Rudder (left/right - yaw), while the right stick controls the elevators (up/down - pitch) and the ailerons (left/right - roll). People get used to their particular favoured mode and it is very rare for a person to be able to adapt to more than one mode. So in DMFC, be sure to go for **Mode 2**.

Most transmitters these days (apart from the most basic) are computerised, and the design incorporates a screen and the functions to enable you to program the transmitter for each model's required settings. Once you get started you'll soon find yourself owning more than one model, and the great benefit of computer transmitters is that they let you store the control settings for each model in a separate "model memory". So the number of model memories the transmitter can store is relevant too. It may seem at lot at first, but 20 model memories should be an absolute minimum.

Another important one-off purchase you'll need (though less expensive and less critical than your choice of transmitter) is the battery charger. More about this later.

Quite obviously, the other most important thing you'll need is a model aircraft, and this needs to be a model specified as being a trainer model suitable for beginners. It is possible to buy a complete combo - that is model and transmitter sold together as a package deal, and this can seem to be a cheap way to get started. However, invariably the transmitter will be a low-spec model, and may not even be useable with other models.

The ideal trainer model will be a high-wing configuration, and be robust enough to withstand the rigours of a few hard landings. There is plenty of choice, but some models are more popular than others, and once again it can be beneficial if there are others within the Club having a similar model. They can be "built-up" (made of balsa wood and light ply covered with film - the traditional building method), but these days some of the most popular training models (and advanced models too) are made from a hard foam material that is both resilient and easy to repair (provided you collect all the "bits" if they break on crashing).

What makes a good basic training model a little different from models designed for more advanced flying skills, is its inherent stability. At the very beginning it is useful for the model to be able to fly on its own, hands off, better than you can fly it, hands on!

The reason for this is that when you start learning to fly things seem to happen very rapidly - faster than you can think and respond to - so a stable model that can right itself buys you the thinking time to be able to regain control.

In model flying, you will have to reconcile yourself to the inevitability that occasionally models will crash and be written off. But if this were to happen on every flight just when you're getting started, it would be very disheartening, and also very expensive!

That is why a buddy-lead system is so useful, and why an inherently stable model is so desirable for a beginner. Some manufacturers now have models that use stabilising electronics to make them very easy to learn on, but you will find that not everybody agrees that this is necessarily a good idea. In the very early days it can be very helpful in preventing crashes, but it is important for trainees not to become reliant upon this technology, or they will never progress in their flying ability.

The most fundamental choice to make with the model is the power source. Today electric power has become the mainstream power-train of choice for many modellers and this is certainly the case in DMFC. Electric-powered flight is very reliable, clean and easy to use, and of course much less noisy than internal combustion engines. Noise has become a major issue for model flyers everywhere as housing encroaches ever further into the kind of "green" areas where model flying has traditionally taken place. An electric-powered model is therefore considered preferable to i/c for beginners within DMFC.

One of the other great developments in model flying in recent years has been the availability of **ARTF** (Almost Ready To Fly) Models. Prior to this, before you could even think about flying a model aircraft, you would have to build one - which could take a long time even for a skilled builder. And for those with no modelling skills at all, (the writer included), this was an insurmountable obstacle to model flying. But ARTF models have changed all that. Now you can buy a model today and fly it tomorrow, or even in some cases, today!

Generally ARTF models do require some degree of assembly. A model aircraft would require a huge box if it were to be delivered absolutely ready to fly. So ARTFs are broken down into their major components which need to be assembled to get the model ready to fly.

The "Almost" in ARTF is very much a sliding scale. Most require some glue to put them together, but quite a few recent models simply screw together.

Many today come with the motor, electronic speed controller (**ESC**), and servos already installed. Others require (allow) you to choose your own power-train and servos. It is rare for models powered by internal combustion engines to arrive complete with the engine installed and usually these require more work to get them ready to fly.

Whichever power source you choose to start with, there will be other accessories to buy. For i/c you will need support equipment such as fuel, starter battery, leads, tools and spares.

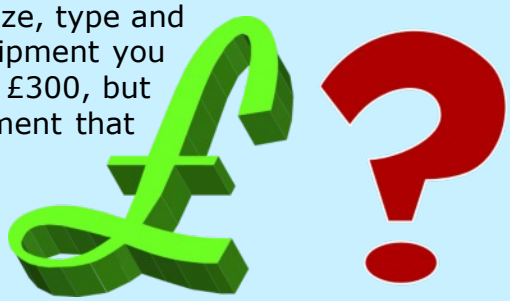
For electric flight you will need a few battery power-packs, and a battery charger and battery-checker as a minimum, although there are some very useful additional tools and gizmos to add as you go along. Chargers come in all shapes and sizes, some mains-powered with a built-in transformer, others requiring a separate 12V Power Supply Unit.

The most important thing to make sure of, is that the charger is specifically designed to charge Lithium Polymer (**LiPo**) Batteries up to at least 5 cells in series. You MUST NOT try using a car battery charger to charge LiPo batteries. An inexpensive basic mains-powered charger is perfectly adequate to start with. Later on you might decide to invest in a bigger more powerful charger, which will be more expensive, as you would expect.

Undoubtedly the best way to decide what equipment you need is to visit the field and have a look at what members are using. Then browse the model shops online to see the many choices that are available.

How much does it cost?

The costs in starting up can vary a lot depending on the size, type and brand of the model and the type and specification of equipment you buy. It is possible to buy everything you need for around £300, but it is generally worth spending a little more to buy equipment that will take you further into the hobby as you develop.



You may be able to save quite a bit by purchasing secondhand but make sure anything you buy this way comes from a reliable source. In most clubs there are members who are upgrading their kit or needing to make room for a new model, so ask around.

As previously stated, the choice of transmitter is the most important decision you will make, and there are several considerations which should guide your choice, so read the whole of this article and discuss with your instructor before deciding which make and model to purchase.

Here's a check list of the minimum equipment you'll need to start with

- Minimum 6-Channel Transmitter (preferably brand-compatible with your instructor's)
- 6-Channel Receiver (if not supplied with Transmitter)
- Basic Electric Powered Trainer Model (including servos, motor and ESC)
- At least three flight batteries of the size and type required for your chosen model
- LiPo Battery Charger (mains-powered is recommended)
- Battery Checker (to check battery state before and after flight and before charging)

It is worthwhile shopping around for the best prices of all these items as prices and specifications can vary considerably and are constantly changing. Don't forget to allow for shipping costs when ordering online.

In addition to this, you'll need to factor in the DMFC Annual Subscription and Joining Fee and the SAA or BMFA annual subscription which will include vitally important 3rd Part Insurance Cover.

There are various other things you might wish to purchase, and other things you may need to purchase as time goes on, but this check list is just to give a basic guide to the minimum requirements. As mentioned above, don't forget to ask around the club to see if any of the above can be purchased second-hand from other Club members.

How long will it take to learn to fly?

Radio-control model flying is about eye-to-hand coordination, and unlike driving a car, or even flying a full-size aircraft there is no "feel". So inevitably some people find this easier to do than others, which means that the time to climb the learning curves varies greatly from individual to individual.

You can learn up to the solo stage relatively quickly if you fly frequently. On the other hand, if you only fly occasionally, it can take quite a long time since time is spent at each lesson re-learning the last lesson rather than making further progress. As an average, given reasonable weather conditions and reasonably frequent flying lessons, an estimate would be eight weeks to first solo and perhaps three months until you will be ready to try for your Bronze certificate. If that seems a long time, remember how long it took to learn to drive a car. Model flying is actually rather more complicated.

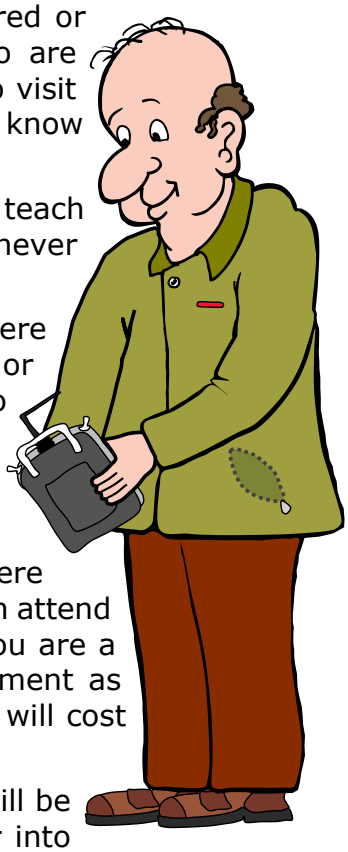
The good thing is there will always be new things to learn, so the hobby will never get boring if you seek to develop your knowledge and skills. There is always new technology, new kinds of models, and advanced flying skills to learn. But the thrill of a good flight followed by a sweet soft landing never goes away!

Who will teach me?

If you already know a DMFC member who is an experienced flyer, it may well be that he is the ideal person to teach you, or at least to buddy-lead with you for your first few flights.

If not, ask around at the field if anyone would be willing to assist you. A lot will depend on which days, and the time of day when you can make it to the field, and the compatibility of your transmitter with theirs. As you would expect, all the members have other commitments and interests in their lives, and so they tend to group into specific time-slots that suit them.

At DMFC there is a weekday morning group, comprising mainly retired or unemployed members or those on holiday from work. Those who are employed generally have to fly evenings and weekends. It is best to visit the field at a time when you will be able to attend regularly, and get to know the members who also fly regularly at that time.



Please remember though that even if a fellow-member is willing to teach you, it does not necessarily follow that they will be able to attend whenever you want them to.

You may have to work with several different instructors. At times there can be a shortage of tutors either due to the number of beginners or because an instructor is trying to sort out some of his own models. Do not be scared to ask if anyone is available to tutor you or simply oversee your flying practice. You will usually find someone willing.

How much does the tuition cost?

If you are in a desperate hurry to learn, and money is not an issue, there are a few commercial model flying schools around the UK which you can attend for short courses, and this can be a very quick route, especially if you are a fast learner. But most beginners are trained within a club environment as outlined above, and here the tuition is completely free of charge. It will cost you nothing!

Most members love to share their love of this wonderful hobby and will be happy to teach you simply for the pleasure of initiating a newcomer into our fascinating sport.

But do remember that they want to fly their own models too, so don't expect them to spend all day with you. On average you can expect to fly perhaps three or four times in a flying session. In any case you'll probably find that this is all the instruction you can absorb in one day.

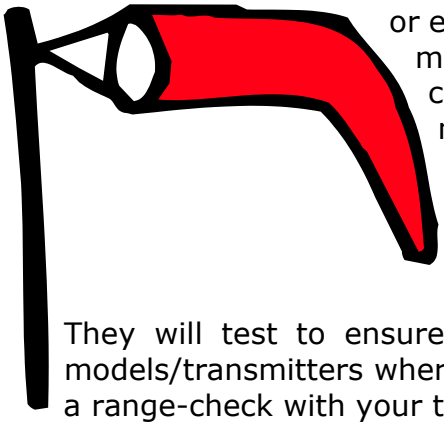
So I've got my exciting new model - what happens next?

Ideally you will already have visited the field a few times and made friends with the members there. They may well already have advised you about your choice of model and may even have helped you assemble it. You'll be amazed how friendly and helpful our members will be if you ask for assistance in any aspect of the hobby. We all had to start sometime.

The first and most important thing now is to get an experienced flyer to perform a thorough safety check on your lovely new model. Ideally choose someone who has the same brand of transmitter as yours, as he will be familiar with it, and may be able to buddy-lead with you.

They will check that everything is secure and put together correctly, that your battery (electric flight) is adequately secured, and that the model balances correctly with the battery installed. If a separate RX battery is installed, they may want to check its voltage under load.

They will use your transmitter to test the control surfaces for correct deflection and degree of movement (the "throws"), and may suggest reducing the movements or even perhaps increasing them in your transmitter settings. They may want to add exponential to the settings, as this makes the controls slightly less responsive, which is highly advisable since most beginners tend to over-control models at first - (exponential is another huge benefit of computerised transmitters).



They will set High Rates and Low Rates for the control surface movements and ensure that Low Rates are selected for your first flight.

They will test to ensure that the fail-safe is set as this is a legal requirement for models/transmitters where this is possible. And then they will probably want to perform a range-check with your transmitter (even if you say you've already done one).

While all this is being done, ask the tutor to explain every step to you, and pay close attention to what is being said. These are all things you will be expected to do for yourself before long.

If there are any issues with your model, it may be possible to fix them there and then, or the instructor may declare the model unsafe to fly and specify things that need to be sorted out back home at your workshop. If you need assistance to do this, just ask.

By now you will have gathered that safety is a very significant issue in model flying. Every flying model aircraft is effectively a missile, and an **UN**guided missile on a model flying field is potentially much more dangerous than a guided one! It is vital that your model will respond properly to control inputs when in the air.

If all the above has been done and the model is declared safe to fly, the next stage is for an experienced pilot to fly your model and "trim it out". All models must be properly trimmed on their maiden flight, and this is something that requires an experienced pilot to do. Your transmitter will have controls which can make very small minor adjustments to the way the model flies. Ideally this needs to be done in calm weather conditions.

A well trimmed model should fly straight and level at cruising speed with hands off the controls, so if yours has a tendency to pitch, roll or yaw from the straight and level, this can easily be remedied. Your transmitter will remember these small adjustments as part of the model memory for future use, so this won't need to be done again provided you don't make changes afterwards.

They will also check the control responses to ensure that the model will be suitable for a beginner to fly. And they should also check the stall characteristics and glide angle with the power off so as to be aware of any nasty habits the model might have at slower airspeeds.

You do need to understand and accept that there is an unwritten "rule" in model flying, that if you allow anyone else to fly your model, there is no compensation if for any reason the model should crash and suffer damage or destruction.

This is something all model flyers accept, and many model-owners have to ask more experienced pilots to trim their models for them, as it requires a particular skill which takes quite a lot of experience to acquire. As you might imagine however, it is never pleasant to be responsible for the demise of someone else's model and for this reason some members may be reluctant to fly your model, especially untrimmed, so you may need to ask around for someone who is willing to trim out your model, and affirm your agreement to these terms.

Before your first flight, your tutor should give you some clear instructions and guidelines regarding ground handling safety and safe practice. It may surprise beginners that most serious accidents in aeromodelling occur on the ground, in the pits, and not infrequently at home, in workshops and gardens.

Your first flight

So … your model has been thoroughly checked out, flown for the first time and trimmed out, and now it's your turn to have your first try at flying your own model. One important point here - do **wear sunglasses** - this is important. Looking up into a bright sky for long periods can seriously damage your eyes if unprotected against UV light.

If you have bought a buddy-lead for your transmitter, ask your tutor if he can buddy-up with you. That might mean he must set up a model memory on his own transmitter and program in identical settings to the one on your transmitter. If you don't have a buddy-lead, it may be that another member with a similar make of transmitter may have one and be prepared to lend it to you.

If you don't have a buddy-lead you must be prepared for the transmitter to be passed repeatedly between you and your tutor, which is potentially risky (especially if it's dropped) and gives your tutor far less opportunity to avert a crash and save your model if you lose control. It also means you cannot use a neck-strap.

As you take up your position at the pilot stance, no doubt you'll be having an adrenalin rush, and will feel quite nervous. Don't worry - that is normal and healthy!

For the first few flights, the instructor will perform both the take-off and the landing. After take-off he will take the model to a reasonable height before announcing his intention to give you control, which he can do by activating a switch on his transmitter if using a buddy-lead, or by passing the transmitter to you if not. A well-trimmed model will continue flying straight and level while control is passed over.

With the model at a safe height, the instructor will ask you to do some gentle turns. Remember, if it's properly trimmed, the model flies happily straight and level without any intervention from you, so controlling it is actually a matter of overcoming this natural inertia. Do not over-control. Only small, smooth gentle stick movements are required to execute most manoeuvres.

NEVER take your eyes off the model, even for a moment, and if you feel you are losing control or orientation, tell your tutor immediately and hand control back to him. In such cases, the sooner you give control back to your tutor the better. Too often it happens that the tutor isn't given back control until it's too late to save the model.

This is another benefit of a buddy-lead of course - the tutor can ***take*** control back himself, the moment he senses you are losing it. Realistically the instructor will need to take back control quite frequently during the first few flights, but this will become much less often as you progress.

It is vitally important to be aware of the orientation of the model, (whether it is flying towards you or away from you, and even whether it is upside down or right way up!), and this is not always easy. On overcast days the model may be nothing more than a black silhouette in the sky. Don't allow the model to fly too far away as it is much harder to assess orientation when it is at a distance. And ***NEVER*** allow the model to fly directly over your head or behind you.

After a few flights like this, when you're able to fly the circuit with the model under proper control, your tutor will get you to try a take-off, and make you aware that models often tend to swing to the left on the take-off run, so you need to be ready to input some right rudder during the take-off run. He will be reluctant to let you try a landing for a while, until he feels you are ready, and he may first want you to try some power-off glides at height to let you see how the model responds at the final stages of the landing. And you need to see that sufficient airspeed is vital to sustaining flight. If you slow an aircraft down too much it will stall and drop out of the sky! Then some landing approaches to get you used to turning into wind in line with the runway and at a height conducive to a smooth landing within the runway length available. When you can do this confidently, you'll do your first landing!

As your ability improves and the need for the buddy-lead is less, you will progress to just needing an experienced pilot to stand with you and give verbal advice while you practice the SAA Bronze test programme. It is really important when learning to fly that you get to the field as often as possible to accumulate "stick time". If you only attend once a month, you will spend most of each lesson having to relearn what was covered last time and progress will be frustratingly slow, both for you and for your instructor.

Get organised

It is important that from early on you start to take responsibility for your own model and other equipment. When you first start, the technicalities of this strange new world can seem daunting, even overwhelming, but everyone at the Club including your instructor will understand that. We've all been there.

There is a lot to take in, and it is accepted that you need plenty of help and advice early on. You won't always remember everything you're told first time either. But on the other hand you cannot expect to rely on other people to do everything for you indefinitely, and realistically you won't want to. So right from the start it is a good idea to get organised. It is very frustrating for instructors when their students turn up at the field with half-charged flight batteries or transmitter, model-parts broken, missing or inadvertently left at home, and some of the most basic issues not sorted out at home before you come to the field.

The most effective way not to forget things is not to rely on your memory! In other words, make check-lists and wherever possible organise all your essential field equipment into convenient and portable bags or cases so that all you have to remember is to put the specific bags or cases in the car, so it quickly becomes routine.

Make sure you store wing spars and screws, canopies etc. on, in or with the model so you cannot forget them when loading the car, and don't forget sunglasses and any assembly tools you might need.

Also, take the time and effort to climb the learning curves yourself, even if it seems an uphill struggle to begin with. All will become familiar surprisingly quickly but you will need to bring some personal commitment to the learning process. Read the manuals carefully, but if you don't understand some of the instructions or jargon, just ask. Help is at hand.

You will need to learn how to program your transmitter model settings, but it is frustrating for an instructor, when he has taken the time to trim and set up your model correctly, to find that next time it is brought to the field all the settings have been altered and it needs doing all over again - so when you want to practice programming your transmitter, set up another dummy model memory and play around with that, rather than messing up the set-up that has already been programmed for your trainer model.

Develop good habits from the start

Take a pride in your models and keep them clean and tidy, inside and out. Anchor the receiver and other components properly. Route leads and cables carefully. Make sure the flight battery is properly secured for every flight.

When you fly on a commercial airliner, you have a right to expect that all the necessary pre-flight checks and safety procedures have been done, and you should demand no less a sense of organised professionalism in yourself when it comes to model flying.

Aviation of any kind is no place for cavalier or slovenly attitudes and carelessness. Your own safety and that of others around you demands an organised and sensible approach to all aspects of the hobby and it makes it much more rewarding when you bring this kind of approach to your own flying.

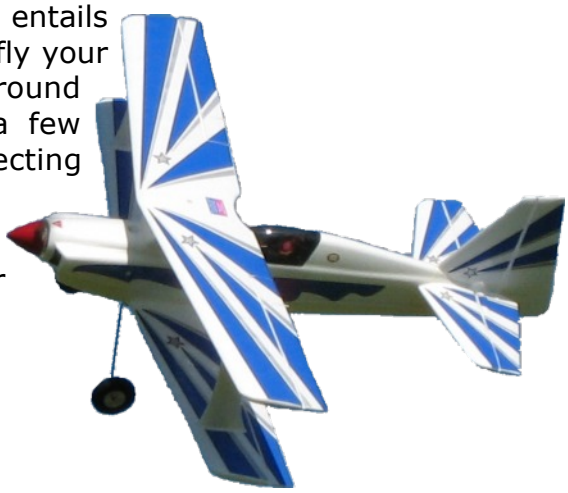
Before every flight, pilots of full-size aircraft have to go through a set routine of pre-flight checks. These start with an exterior inspection of the aircraft for damage or anything else that might interfere with the correct functioning of the aircraft in flight, and continue through to a set of cockpit checks known as "Vital Actions". The same principles should be applied to every model flight. Careful pre-flight checks can go a long way towards avoiding dangerous loss of control in flight and the inevitable disappointment and expense of crashed models.

The way ahead

Right from the start of your instruction programme you are really entering the training schedule for your SAA Bronze Certificate. The SAA Bronze award is the gateway to being allowed to fly solo, and the threshold of what will hopefully be a lifetime of fun and enjoyment.

You are taking your first steps into a truly interesting, absorbing and rewarding hobby which will enable you to make a lot of new friends and enjoy the company of a great bunch of guys who share the same interest.

You can see in detail what the SAA Bronze certification entails on the SAA website, but basically you must be able to fly your model safely, and understand and practise safe ground handling procedures too. You will also be asked a few questions regarding legal and safety issues affecting aeromodelling which you must answer correctly.



You may find it helpful to read the articles about Electric Flight and LiPo Battery Safety which can be viewed and/or downloaded from the DMFC website.

We wish you "Happy Landings", and lots of fun!

dmfc.org.uk