Building model aircraft from kits. (Part 1.)

At first, building a model may seem a very daunting task. In reality it’s a very simple process of gluing one piece of wood to another, using the correct glue for the job.

For the most part, the kit parts are pre shaped for you, the strip wood just requires trimming to length and some light sanding to shape. A very useful tool to have is a razor plane. These are easily available and make light work of shaping balsa wood.

Nearly all kits come with a full sized plan, which you can use as a reference for measurements and alignment.
Lay the plan flat on the building board and cover it with clear plastic to protect the plan from glue etc. An alternative is to rub the plan with a wax candle to stop the glue sticking to it. Use drawing pins to hold the plan down tight.

Step by step instructions are included with the kit to guide you through the build. These are divided up into different sections eg. Wing, Fuselage, Tail, Fin. Etc. I personally prefer to start with the wing, as this is usually required at some stage for alignment purposes when you are building the Fuselage of the model. You can change the order of build for most of the main parts to suit you with many models but as a beginner you may just want to start at the beginning and follow the instructions as they are.

However you intend to start building, as with any practical project, the single most important thing you need is to be well prepared and relaxed. The biggest hindrance to my model building is not clearing away tools, off cuts, nuts and bolts etc. Any one of these items can and you may be sure, will make a nasty dent in your masterpiece.

**Preparation Is the Key.**

So what will you need as a bare minimum to build a kit?

- **A flat surface to build on.**

  This can be anything really but it ‘Must be flat’. It should be a little larger than half the wingspan of the finished model and wide/long enough to build the finished fuselage on. You should be able to stick pins into it also.

  Many people glue cork tiles on top of it for the pins, some use plasterboard on top as its cheap and disposable. I personally do a lot of building, so I invest in a sheet of Sundela. (a fibrous board which takes pins) this is about £40 a sheet 8’x4’ but will last for years. The beauty of this hobby is that you can make it as cheap or as expensive as you like.

- **Tools.**

  Scalpel. (Swan Moreton no 3 handle) and 10a blades.

  Sanding block. Fine and course. I use two bits of 1/2” balsa glued together and fix the sandpaper on with 3M spray mount.

  Steel ruler and a square.

  Vernier gauge. It's one of the most useful tools I have.

  Razor saw.

  Pencil.
Drill of some sort and bits from 2-6mm.

Rubber bands.

Pliers.

Pins.

A small vice is very useful and can be bought cheaply

Clamps and some weights to hold things flat.

That lot will be enough to get you started. The only other thing is a covering iron. It is of course a rite of passage to use the wife's iron in secret first time around. You haven't lived till you see the look on her face when you get caught. 😃

- Glues.

Using the right glue for the right job will make all the difference during the building process and can increase the lifespan and durability of your model greatly.
Epoxy.

This is the strongest glue you are likely to come across when building a model. It is a two part glue that you mix together and comes in many different forms. For our purposes though, we mainly use 5 and 30 minute epoxy depending on it’s application. 5 minute is the most commonly used. 30 minute is mainly for more fiddly and time consuming assemblies.

Epoxy will glue almost anything to anything else (except shiny plastics). Metal, wood, Carbon fibre etc. and is used for high load jobs such as firewalls, Wing joining and wing bolt plates etc. It is temperature sensitive and will take ages to go off on a cold day and very rapidly when warm. DON’T be tempted to get it hot to speed things up as it generates heat when curing and can start to boil up if you get it wrong.

Cyano.

Or superglue as you may know it. I mainly use this for tacking parts together, while PVA (white glue) cures. This speeds up building time whilst allowing all the benefits of PVA. Eg. Great strength and flexibility. Cyano’s can also be very strong but the downside is that they are brittle and not really suited to sudden shocks, for example a hard landing.

There are thicker and more flexible versions of this adhesive that are even foam friendly but I prefer PVA in most cases. An exception here is when bonding carbon fibre as thin very runny consistency of thin cyano bonds right into the carbon fibres making an excellent bond. I’ve fixed extensions to cooling ducts on helicopters using carbon tows and found that even oily shiny plastic parts are bonded very well.

Cyano really will glue you to just about anything so please be careful.
PVA.

Traditional white glue. Easily and cheaply available from builders merchants and model shops. PVA is incredibly flexible and strong, used in most areas of a model construction, where wood parts are joined together, or to foam. Due to its flexible nature though it doesn’t sand down very well, it tends to roll into little balls. PVA can be watered down a little to make it runnier so that it will soak into the wood a little better.

Aliphatic Resin.

This glue can be found in many ARTF models. It is in effect a bit of a compromise between cyano and PVA. It is thinner and soaks into the wood very well, it dries faster than PVA but not nearly as fast as cyano. Also it is not quite as flexible as PVA. On the plus side Aliphatic does offer speed, a little flexibility, but it does sand down nicely and can be used where two parts slot into each other or are joined prior to glue being applied.

Rc Modellers glue.

Very similar to PVA with one great exception. It is ideal for gluing on canopies and plastic parts. Even in areas where oil from the engine exhaust can cover the parts I have found this adhesive to be very good. It etches into the material being glued and will bond foam parts and even depron very well.

Fuel Proofer.

I have included this in the glue section as it does have certain characteristics of a glue and it should be purchased at the beginning of the build really.
Model engine fuel is fairly aggressive stuff when it comes to glued joints and painted areas. It eats away at things quietly until one day the joint lets go and it all goes horribly wrong.

There are many fuel proofers on the market but a lot of them take up to 3 days to cure. Now I am a great fan of saving time where I can, because with a couple of children I don’t get much. For this reason I like to use a two pack product. These are touch dry in about ten minutes and can be brushed or sprayed on (Please use a mask if you’re spraying, This stuff is nasty if you breath it).

Fuel proofer should be used throughout the engine and fuel tank bay, around the edges of covering film and decals and it can even go in the radio bay which is just a precaution in case a fuel tank bursts. It should be applied on top of painted and covered areas. Correct use of fuel proofer can increase the lifespan of your model by many years.

Armed with all of the above information you will be able to make a start on your kit, confident in the knowledge that you have enough equipment to do the job to a good standard and you won’t keep getting delayed by not having the right gear to hand.

Model building is all part of this great hobby of ours. While the family are enjoying their nightly intake of Eastenders or Coronation street you can be relaxing at the building board, putting together your latest creation. When the time comes to fly your model you can do so safe in the knowledge that you know every nook and cranny has been well put together. The satisfaction of flying something that you have made from sticks is beyond compare.

Happy Building.

Part Two will follow shortly.