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So, you want to build a kit?

With the advent of quality ARFs in recent years, we have seen a huge influx of new people to the sport. Inevitably, many of you eventually decide to try your hand at building. Most are very successful while some others are not. Some of the more successful builders choose to build many more kits while others got the building bug out of their system the first time.

The truth of it is, building is not for everyone. When asked, "Is this a hobby or a sport?" my reply is, "Flying is a sport, building is a hobby" and there are many people out there who have neither the time nor patience for a hobby (or find they are lousy builders and would rather collect stamps).

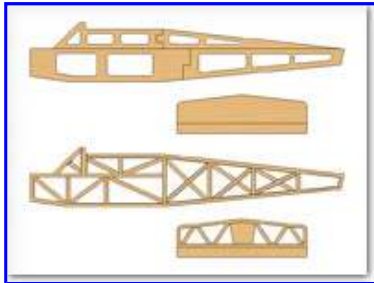
However, if you think you'd like to try your hand at building, you should be whole-heartedly encouraged. Building your own plane is a win-win proposition. Even if you later decide that building is not for you, you will have gained an immeasurable amount of building experience that will always come in handy if you stay in this sport for any length of time.

A good example of this is an experience I had a few years ago. I was invited to fly with a group of guys who were about an hour away from where I live. After a day of flying, one of the guys asked me to stop by his house to look at a damaged plane he had to see if I could help him figure out how to repair it. When we got to his house, he brought out a Goldberg Tiger II ARF that had one of its wing hold-down blocks cleanly broken off from the fuse side. The fix was as simple as gluing the block back in place with epoxy. I remember thinking, "He doesn't know how to repair THIS???"

This was the first time that I realized that with so many new people "assembling" ARFs, many of these guys don't have a clue as to how to "build" or "repair" an airplane. By building only one kit, you will gain enough knowledge to do most of your own repairs in the future, and who knows, you just may find that you enjoy building and now have a "hobby" for those days when the weather has you grounded!

Choosing a kit

Your first big decision will be which kit to build. When you learned to fly, you found that it was better to start out with some planes over others - The same holds true with building. No kit is "easy" to build if you've never done it before and like many things, some people are better at it than others, but certain attributes of a kit can either make it an enjoyable experience or a nightmare. Those things would include (but are not limited to): Quality of wood, quality of cutting, parts fit, and most of all - instructions!



Just as a trainer is easier to fly, they are also usually easier to build. As you build more advanced planes, more advanced building skills are usually required. However, even with a trainer you must be careful which kit you choose. There are many kits out there that still use building techniques from the 60's and 70's (if not the 40's and 50's). The more recent designs (and some updated renditions of the old classics) might use a fuselage side where you need to join two to four die-cut pieces, whereas some of the older designs may have a "built-up" fuselage side where you get several 36" long sticks which must be cut into small pieces, pinned in place over the plans and glued together. While this is a building technique that is still often used for a stab or fin, it gets very tedious on a large component like a fuselage.

Another consideration is your flying skills. Nowadays, it's very often that a flier's first building experience comes at a time when he wants to build a more advanced airplane, but he has acquired no building skills. Fortunately, there are several planes that can appeal to a wide range of fliers. You just may have to hold off on building the plane you REALLY want for something that is more within your scope of building. It's like when you first wanted to learn to fly RC and were told you had to start with a trainer and needed to hold off on that P-51. Fortunately, there are several planes that make good "First Builds" even for the advanced flier, but before we go there, let's look at some other things.

Degree of difficulty

How hard is it to build a kit? You may have heard people say, "You pour glue in the box, shake it and an airplane comes out!" It's true that some kits go together extremely well, of course, they are often simple and/or boxy-looking. Let's face it; the only way to produce a simple build is to have a simple design. But the fact of the matter is, it's not SUPPOSED to be easy - but it IS supposed to be enjoyable. There's nothing like building a kit in which at no time during the process you:

- Throw things at the wall
- Threaten to kill the designer
- Start fights with family members
- Kick the dog/cat
- Have the police take you into custody "For your own safety"

So, it will help to know what, and what not to expect.

Don't expect to build it in a week or two - or three, if that's what you want, get an ARF. Building is not something that you want to rush. For many of us in colder climates, we use the term, "My Winter Project". That is, each winter when we can't fly, we build. Often, a kit shows up during the holidays and by spring, we hope to have the plane ready. While my personal best was a week from box to air (That was a week off from work where I did a marathon build) three to four months is about the average building time. So sit back, relax and enjoy the build.

DO expect that not every part is going to fit perfectly, so a hobby knife with a #11 blade can become your best friend. You'll most likely have to trim a few pieces here and there and sand a few rough edges, but this is the "hobby" aspect of the "sport". You are not just gluing parts together - you are woodworking. You are crafting a beautiful work of art from sticks and die-cut parts. In addition, you're getting away from your wife for a few hours per night - talk about

relaxing! (I didn't say that)

Also, don't expect perfection (from yourself OR the kit's manufacturer). I have to laugh when I hear people complain about badly "Die-Crunched" parts. Take a piece of soft, grainy material like balsa, punch a die through it and you're bound to get some crushed areas. Many of us who have been building for a few years remember a time when a kit had sheets of balsa with parts printed on the wood and you had to cut them out yourself (we also had to walk ten miles to school in three feet of snow, etc.). In fact, there are still quite a few kits that are still out there like that - which is why it's important to know the kit you're getting before you get it.

Ok, so let's say the ribs have some rough edges. Your next best friend is a sanding block. Lightly run the block over the edges to remove any burrs, but don't try to sand the edges smooth! While it's true that the best glue joint starts with a good wood-to-wood fit, it is far more important that you don't sand the pieces until they have lost their size or shape. So maybe the edge isn't perfectly smooth, it just won't matter, the glue will still hold, no need to start throwing things.

Builder's Kits

Another problem you may encounter your first time out is the dreaded "**Builder's Kit**" (aka Craftsman's Kit). As I said earlier, some kits are easier to build than others. Obviously, a plane whose nose features an upright engine with "cheeks" along side it will be easier to build than a plane whose nose is carved and sanded to shape. However, regardless of the actual work involved, a builder's kit bumps the degree of difficulty up a few notches.

For example, in a modern kit, most parts are cut or pre-shaped, and numbered, and the instructions guide you step-by-step as if the designer intended it to be built by someone with little or no building experience. However, in a builder's kit the designer assumes that the builder is very experienced, even a master craftsman, so little instruction is involved and much of the engineering is left up to the builder.

To give you an example, a "good" kit may tell you in an early step to drill holes in the firewall for the engine mount and install blind nuts into the back, then in a later step, tell you to glue the firewall into the fuselage. Whereas, a builder's kit may tell you to "Install all fuselage bulkheads" leaving you to decide if this step includes the firewall - and if you didn't think to add blind nuts beforehand, you may have a very difficult time doing so after the firewall has been installed!

Now, don't get me wrong. I'm not saying builder's kits are bad. In fact, builder's kits will produce some of the best models you'll ever see. However, they are not for the novice builder!

But here's the rub... Almost all of the kits that were designed since the mid-80's use the easier building techniques, and many of the earlier classics have been updated. However, there are still many kits produced by well-known companies that were designed way back when which have never been updated. These kits are in essence, builder's kits and if you are not aware of it ahead of time, you're first building experience could be very frustrating.

As always, the RCUniverse forums are always a good place to ask about a certain kit, but as good as the forums are for getting information, you'll want to specify things like "ease of build", "Step-by-Step instructions" or whether or not this is a newer kit. Otherwise, someone who may be a master craftsman might suggest you build a kit that HE thoroughly enjoyed building - forgetting that you do not have his skills and/or knowledge base. So it's always a good idea to ask someone you know and trust.

Mistakes

Mistakes are a part of building. I must make eight or twelve mistakes with every plane I build. The way I see it, that's why God gave us wood filler. Now of course, some mistakes are worse than others and some you can live with while others

may require un-doing a step or two. Then there are the big ones where you need to, oh, maybe remove the stab that was epoxied in the night before (At this point it is perfectly acceptable for even a member of P.E.T.A. to kick the cat). But don't get discouraged, you're not the first one who will make a mistake and you sure as hell won't be the last!

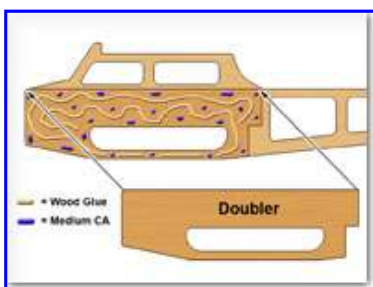


So you may be required to do some major surgery (this is a great time to ask the forum experts for advice). Just take your time, carefully cut into your beautiful creation and fix as necessary. Then slap on the wood filler and sand it back to its original shape. Once it's covered, no one but you will know it's there.

Glue

Another question we hear often is, "What type of glue should I use?" Most kits will require at least two types of glue and very often three. You will need epoxy for areas that require a lot of strength, like firewalls, wing joiners, landing gear plates, etc. Most of us agree that the 30-minute variety of epoxy is the best choice for building since you will need the extra setting time to align these parts properly. However, most of your gluing will be done with a glue of your choice.

Many modelers today use medium CA for the bulk of their building. Medium CA is what is popularly known as "Crazy Glue". It is strong and it sets very quickly, so it makes for much shorter building times. A few downsides to CA are the cost and the fact that due to its quick setting nature, you don't have much time to get the parts aligned before it's too late. It can also be a bear to get off your fingers (most builders who use CA will attest to the fact that they glue themselves to the model at least three or four times in the process). However, one of the biggest complaints about CA is that some people develop an allergy to it. It is for this reason that many modelers choose to use an *aliphatic resin* glue. "Aliphatic Resin" is a fancy word for what we commonly call "wood glue" and any good wood glue from Titebond to Elmer's Glue-All will work great (and they are a lot less expensive).



Personally, medium CA is my glue of choice, but to conserve its usage on large parts (Like fuselage doublers, or cap strips) I often use a combination of wood glue and medium CA. The wood glue covers most of the area while strategically placed drops of CA act as clamps to hold the pieces together while the wood glue dries. With this method there is no need for pins or weights, so you can continue building as long as the parts are not stressed.

If you are using CA hinges you will also need to use Thin CA. Thin CA (a.k.a. Instant CA) can also be used for building, but it needs to be used properly. To apply it, (just like when you are doing hinges) the parts must be already in place and must have a good, snug fit. Then, only a drop or two is needed directly on the joint. Unlike most other glues, you cannot add thin CA to one part and then attach it to another.

One final word about glue: It doesn't take much! No matter what glue you use, use it sparingly. Globbing it on will only result in gluing your parts to the table, or having it take forever to cure. If you're using wood glue, wipe the excess off with a damp cloth; don't smear it all over the sides of the parts you're gluing. This adds no strength, but it does add weight - moreover, it looks sloppy as hell.

Building Surface

A building surface should be one of your next considerations. The thing to look for here is that it must be flat - and it must STAY flat. A sheet of glass is flat, but if you lay it between two saw horses it will bow in the middle. You'll need a building surface that will remain flat even if you pile weights on top of it (which is very likely in many builds). Aside from that, it can be just about anything from a piece of quality 18" x 36" plywood that sits on your desk, workbench or dining room table (with the wife's permission of course), to a free-standing workbench with a butcher block top.

Many people like to use hollow-core doors, which can often be found inexpensively in the damaged goods section of your local home improvement store (ask the clerk, they usually have a few in the back). Now you can build a frame for it, set it on top of an existing table, or lay it across a couple of saw horses. If you use the saw horse method, don't put the horses all the way on the ends or the top may bow in the middle. Keep them about 1/4 to 1/3 the length in from the end (and if you have a third horse for the middle, all the better).

Most builders also like to pin parts to their building surface, so while you're at the home store, you might want to pick up a cheap ceiling tile (They may have those in the damaged section too). They are great for sticking pins into and all you have to do is lay it on top of your building surface and it will stay flat.

Tools



You will of course, need some tools. Just about everyone has their favorite list of "must-have" items, and it's true that the more you have, the easier jobs become, but you also don't need to run out and buy a fully equipped woodworking shop.

Here's a small list of what you WILL need:

- A hobby knife with a #11 Blade
- Sandpaper (preferably with a sanding block)
- Drill and drill bits
- Straight Edge (preferably metal)
- Pins
- Various hand tools (Pliers, screwdrivers, etc.)

Another item that, while not essential, will make your build much easier is a razor saw. If you're on a tight budget, you can even get by with buying just a razor saw blade and skip the handle, but this is a VERY usefull tool when building.

Next come the more specialized items, such as a rotary tool (Dremel type), a long sanding bar, a set of ball-end hex wrenches, files, a razor plane, a square, etc. Again, while not essential, these tools can be very handy to have around.

Next come the machines, Drill Press, Scroll Saw, Belt/Disk Sander - The list goes on, but there's no need to run out and buy anything big right now. If you decide you really enjoy building, you may want to consider these in the future.

Covering

Another thing you need to consider is covering. This is a whole topic in itself and I have already written two articles on the subject which I invite you to read:



So, what kits should you start looking at?

Let's look at some of the top brands:

? **Balsa USA:** Excellent kits, but these are geared more toward the expert builder and not a good choice for the novice.

? **Carl Goldberg:** Excellent kits. There have been some issues with quality in the past, but they seem to be over that. One of the nicest things about Goldberg kits is that there's not a bad flier in the bunch. Every one of them is a winner. For a basic trainer, look at their Eagle II. For a great intermediate trainer, the Falcon III or Tiger II (or Tiger 60) are excellent. For the intermediate to advanced flier, the Goldberg Chipmunk is a winner!

? **Great Planes:** Also excellent, but a good example of, "The more advanced the airplane, the more advanced the building techniques". Easy builds are their PT series of trainers, or for an intermediate plane, try the Rapture or Dazzler. If you're an advanced flier, their Extra 300 is a good choice and while their Ultra Sport is one of my all-time favorites, it's not a good choice for a first-build unless you at least have some good woodworking skills.

? **SIG:** Another A+ kit maker, but you need to be careful. Many of Sig's kits have not been updated since the 70's and can be very difficult for the novice builder. The Sig kits that do make excellent "first builds" are, the LT-40 (The LT-40 is probably the most popular trainer on the market both for flying and building), for intermediate fliers, the Four-Star 40 (or 60) and for the more advanced flier, the Somethin' Extra.

? **Top Flite:** Another company whose kits are outstanding, but again, not for the novice.

A Suggestion...

For the intermediate to advanced flier, I have to plug my favorite choice of the best kit for your first build:
The Sig Wonder.

Here's why:



? **Small** - Due to its small size and low part count, it can be built faster than anything else out there. A quick build also means you won't get bored or discouraged as you might with a longer build. The small size also means less area to cover.

? **Inexpensive** - It costs so little that even if you totally screw it up, you can make firewood out of it and you haven't lost your shirt.

? Versatile - The Wonder is made to be customized. The directions give you several options for wingtip, tail and canopy designs so that you may build the version that you like best (which will also teach you some skills for modifying in case you ever decide to do modifications on a larger kit in the future). Also, the Wonder can appeal to a wide variety of pilots. An intermediate flier can put an .049 to a .10 engine on it and handle it well, while an expert flier can put a .15 - .19 on it and it will be a screamer! (I put a .25 on mine and it was insane!)

? Easy yet educational - Although the Wonder is an easy build, it incorporates a lot of the building techniques found in more complicated models, but due to its diminutive size, these steps are easily accomplished and will prepare you for future builds (You can also learn from any mistakes so you can avoid them on your next build). So with a small investment of both time and money, you can decide whether you want to build bigger and better things, or if building is just not your cup of tea.

Summary

Obviously, there are a lot more good kits on the market than what is listed above. If you have a particular kit in mind that you'd like to know more about, just stop by the [Kit Building forum](#) here at RCU and ask. They'll be glad to help you out!

Just remember, whatever kit you choose, read the instructions before you start and make sure that you understand what is happening in each step before you ever cut or glue something. - And when the inevitable mistakes happen, just pop into the [Kit Building forum](#) and we'll be glad to help.

And above all else... Enjoy the build!