

HELLFIRE

Painting

ASSEMBLY



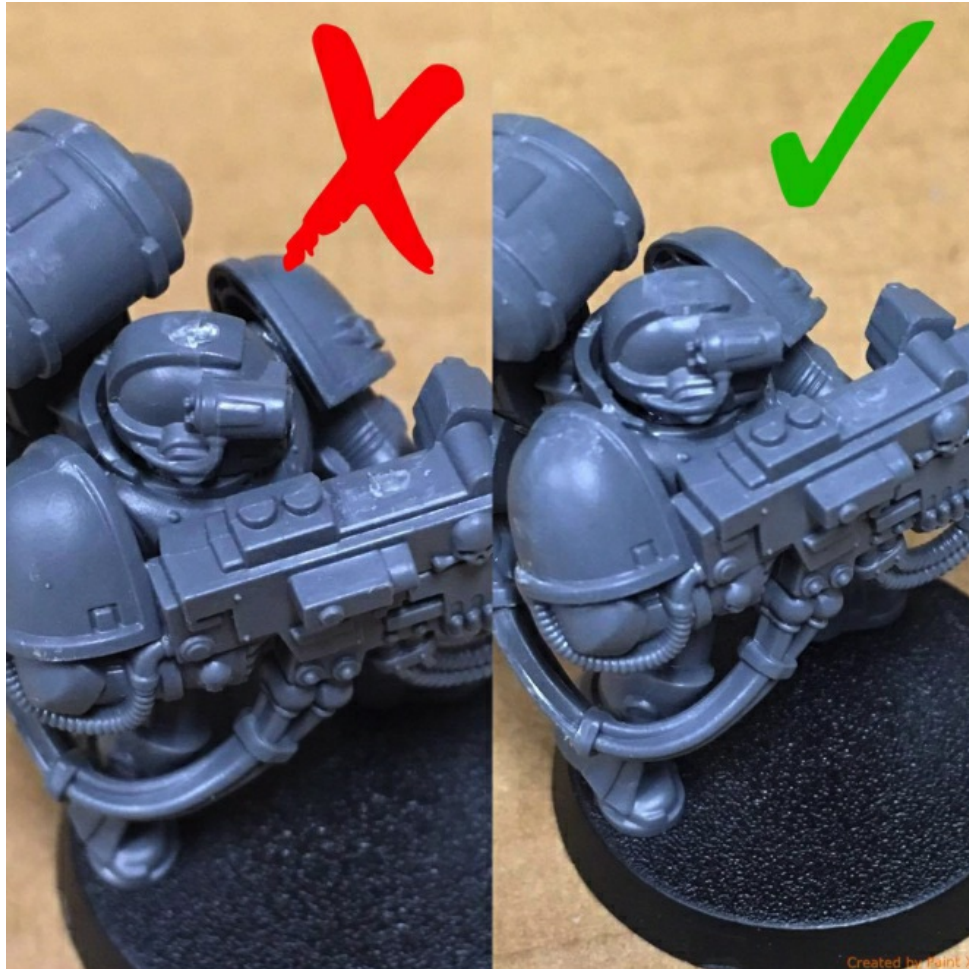
HOBBY FUNDAMENTALS VOL I

I got my first model kit ever as a Christmas gift when I was around 8. It was a 1/35 scale jeep like the one my grandpa use to drive. The look of sadness, deception and fear on my face as I opened the box only to find that I had to build little part of the truck before painting it is something my folks talked about every Christmas since as we open gifts.

But do not fear, as unlike 8 years old me, you now have a guide on what to do before ruining a perfectly good 1/35 jeep – or whatever other model you have.

Hopefully you bought the kit knowing some assembly was involved, even if you didn't know exactly what you were getting yourself into. If not, know this now: models rarely if ever come ready to paint straight out of the box. Even models from starter set or aimed at beginners are at the very least snap-fit, and usually, they are far from fitting and don't quite snap without some extra help. Luckily, this book will cover all you need to know. Whether your model is a miniature railroad house, a 1/35 scale tank or a gaming piece, the steps to get them from out of the box to ready to paint are pretty much the same.

So we will go over every step of the build, with a description on why you are doing each of these steps as well as a couple of nifty tricks you can use to save time and money along the way.



This book covers all the steps, tools and techniques, as well as a bunch of awesome tricks to help you get the most out of your model and out of your time.

Each section focuses on a specific step and all the tools required for the step.

Introduction and basic setup.

While not a step in itself, having some sort of setup is the key to success. Don't you dare do this on mom's/wifey's most precious kitchen table – the consequences could be dire.

It's much simpler and efficient to build your own little space. The good news is that your setup does not need to be huge or complex.



You want to have a dedicated assembly area or workbench that's separated from your painting area. The main reason for this is that assembly leaves a lot of bits, dust and other residue from the cutting sanding and whatnots. Cleaning up every time you switch between painting and building is tiresome and will sap your motivation quickly.

Your assembly area can be a simple add-on to your painting area that you can remove or put away with all the debris.

You're looking for 3 crucial specifics. Anything more is a nice bonus.

1- Well lit. Staring at the small parts and a poorly translated plan is tiresome enough for your eyes, without having to do it in the dark, so make it easy on yourself.

2- Working surface. It doesn't need to be quite big (~~that's what she said~~) you are dealing with miniatures after all, but you do need an area that can handle glue and cutting mishaps.

3- Permanent. Taking 30 minutes to get your setup ready and 30 minutes to put it all away will take the motivation out of the bravest of all. This is what permanent mean in our case, an area that, if not dedicated to your hobby, is easy to setup and put away.



What constitutes a nice setup? A sturdy workbench with a desk lamp is great, you don't have to worry about stains, cuts and spills and it's permanent enough. A desk with a cutting mat or some sort of protection will be fine.

My personal favourite, however, is simply a box. Like the one your models were sold in. It's quick to take out, is easily stored away when you are not using it and you can have it on your lap and work from practically anywhere. If it becomes too damaged, just use another one.



Having a trash can close by also helps your setup stay clean in the long run, but that's up to you.

PRO-TIP #1: Pre-game!

Before you start hacking away, line up all the parts on a desk and get the plan out of the box. Make sure you have all the parts before you start. If something is missing, you want to deal with it now, not halfway through assembly.



You can usually bring the box back to the store and get a new one or at least get the part that was missing.

If you bought it online, you can e-mail the company that makes the kit. Most companies are easy to deal with and will gladly send you any missing parts- sometimes you get a brand new kit too.

You have a setup. Yay! You have all the pieces. Great! Let's begin!

Washing

Tools: Dish soap, warm water, paper towels.

Not washing your hands, your models.

For most models, the parts come lined up on a frame. This frame is often called a sprue and is part of the molding process.

This molding process involves a bunch of chemicals, some of which might still be on the model when you have it. This varies with manufacturer and material. For example, plastic parts from Games Workshop (makers of Warhammer 40,000) rarely if ever need cleaning, but it's not the case for all plastic models. Resin models on the other hand, from all brands and of all shapes and size require cleaning.

Warm water and dish soap do the trick here. Avoid doing this straight in the sink, you don't want to lose pieces down the drain should any accident happen.

You can either scrub the parts gently with an old toothbrush -gently is the key here, you don't want to break pieces or rip them from the sprue- or if time is not an issue, let the parts soak in there for an hour.

Lay the sprues down on a towel and let them dry before you start.

Removing parts from sprues

Tools: Clippers, Hobby Knife



As a general guideline, always use clippers to remove the pieces from the sprues. The only reason to use a hobby knife is if the part is too small or in too tight of a corner to use the clippers without damaging it. By using the clippers, you minimize the damage on not only the pieces, but also on the fragile blade of the knife.

Your clippers should have a flat and an angled side to them. Always put the flat side against the piece and the angled side towards the sprue. This is also to minimize accidents and damage on the parts that are useful (whereas the sprue will likely hit the trash when you're done)



Make your cut right next to the piece, leaving only a little of the sprue residue on it- it will be cleaned out in a further step.

PRO TIP #2: Step by step, oh baby. The New Kids on the Block were most likely not thinking about models when they wrote this song but hey, if the shoe fits. I find it easier and much faster to clip all the parts for a single step before moving on to the cleaning up part (below)

Cleaning the parts

I've already washed my models, I'm supposed to do it again? Not that kind of cleaning up. The model equivalent of grooming, cleaning up is the step where we get our models ready for glueing.

Tools: hobby knife, file(s), fine sand paper



1. A seam between two pieces 2. A mold line 3. A sprue residue

The goal here is to remove all the extra parts and leftovers from the molding process. There are 3 main things to look out for when cleaning.

1- Sprue residue: This comes to no surprise, as we left part of this on our piece when removing it from the sprue. So we need to clean it up and make that part of the model smooth.

2- Flash line or mold line: Because 99% of the kits are made from 2 parts mold, there is always a fine line in the middle of each sprue, where the 2 parts of the mold meet. On plastic models, this line is usually fine like hair and pretty easy to remove, but on metal or resin models where the molding process is different, it can be quite a tedious process. Easy to find, the flash line is generally going straight through the piece, as this is where the molds meet.

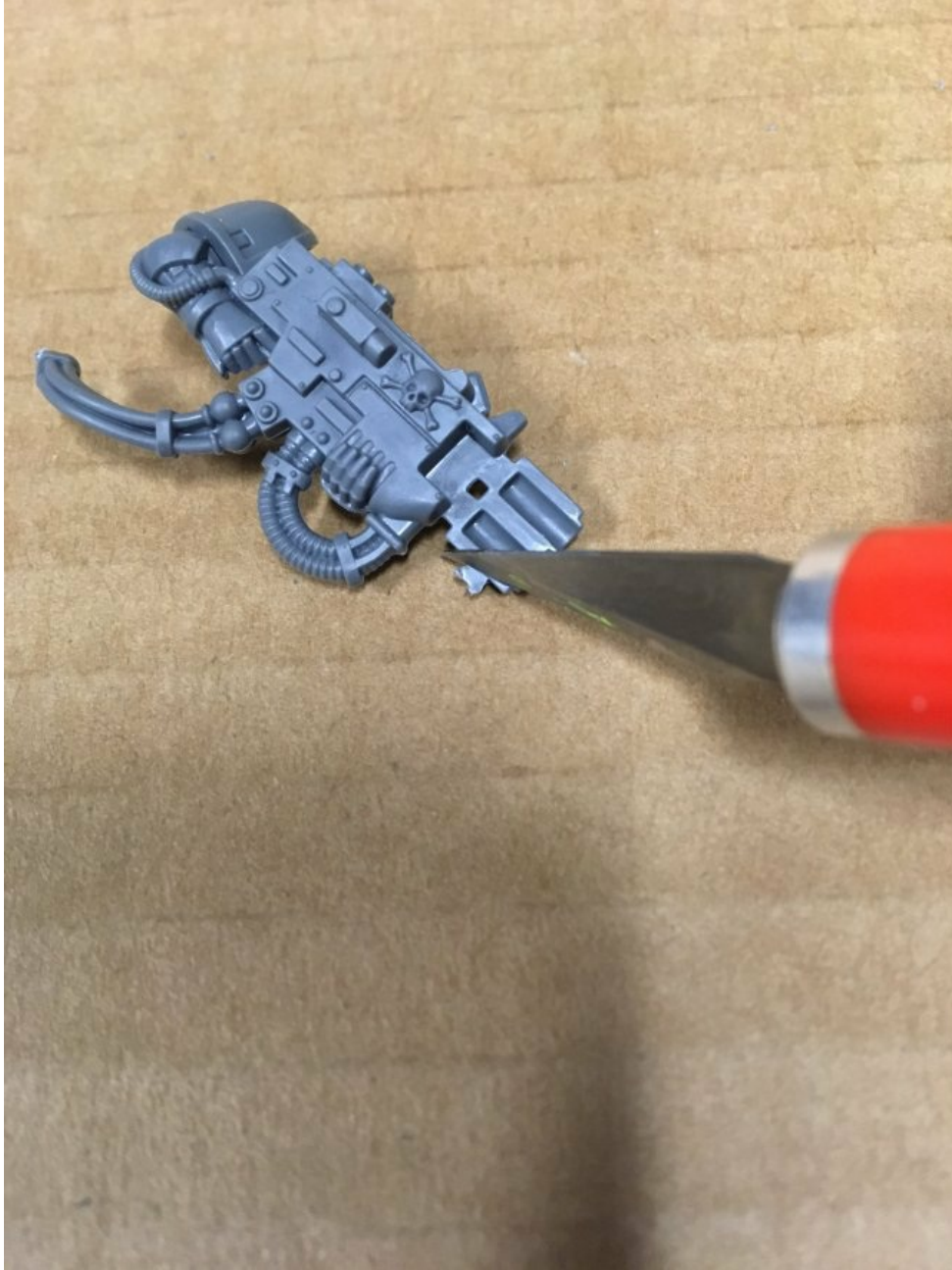
PRO TOOL: Flash Remover. This is by no means necessary, but it's a pretty great thing to have around. A flash remover, or whatever the name you buy it as, is a tool with sharp edges that removes mold lines. I'm listing it as a pro tool because you can do the same with

a hobby knife, only the knife has more uses. If you can only get one, get the hobby knife. In the long run however, the flash remover (around 8\$ from the amazon) will save you money as you won't burn through knife blades quite as fast.



3- Injection marks: Most models nowadays don't have these as they are strategically placed somewhere on the sprues, but again, with different molding process, it's not always the case. The injection mark is the place where the material was poured into the mold.

The cleaning process.



The general idea here is to always go: hobby knife, then file, then sand paper, in that order. You start with the knife because it's heavy duty, and work your way through finer tools that leave a smoother finish.

The other idea is to cut as many of those 3 steps (Knife-File-Sand Paper) as possible.

Why eliminate steps you ask? Because cleaning pieces is utterly boring and time consuming, but also mandatory. So in order to not get bored to death, save time where you can without compromising the results.

Some examples of intelligent step saving:

Well placed sprue mark: This sprue mark is under the model and will be glued on something. As long as no part is protruding, it doesn't need a silky-smooth finish. As such, no need for the file or sand paper here.

Minimal flash line: Injection plastic is one beautiful technology and new models are downright amazing and have very few flash lines. For something so small, it's ridiculous to go through all 3 steps to clean it. With very small surfaces, skip the hobby knife step and only do either the sand paper or use a fine file. And voilà.

Going in dry

Double entendre aside, this step is quite important and too often skipped in the rush of completing your model. More commonly known as dry fitting, you want to try fitting the pieces together before glueing them. This way, you get to ensure they fit together perfectly, and you can figure out where the contact points are so you don't put glue everywhere

Dry fitting is also a good time to figure out if you really want to glue pieces together at all at this point (see PRO TIP #3 below)

This is pretty straightforward, hence why we are not spending much time on it: If the pieces fit, yay you! Move on to the next step. If they don't, got back in with the hobby knife of file and hack away (remember you can always cut more, so hack away with some caution) and dry fit again.

PRO TIP #3: Partial assembly

There are different schools of thought when it comes to what you should assemble before painting and what you should leave separated. On one hand, some painters will prefer to paint everything on the sprues and glue everything together at the end. The other extreme is build everything first then paint, because what you won't reach with a brush are parts you probably won't see anyway. And somewhere in between is the partial assembly, where you will build parts of the kit, paint and then finish building your models.

Somewhere in history, an actual fist fight has started on this assembling first debate, so I won't try to steer you towards either. Pick a method that seems to make sense when you read this, or try a different approach with every kit until you are satisfied. However, note that most plans are pretty clear when it comes to painting something before gluing it in place because it will be impossible to do it later on – think interior of a car for example.

Glue

This is where everything comes together and you're actually building your model. This step is quite simple and comes with 2 basic rules:

1- Don't glue your own bodyparts together. Glue is potent stuff, and you may laugh now about that time Kevin got his 2 fingers stuck together, but eyelids and mouth are no joking matter (*Damn, the lid won't come off, maybe if I pull with my teeth...*) So yeah, glue goes on models, not faces.

2- Use the least amount required. You usually don't need a lot of glue for parts to hold, even gaming pieces. In fact, I'm a barbarian when it comes to models, my miniatures really go to war when I use them for games, yet going overkill with glue is not the answer. Using a lot of glue will make it a lot more likely for some to show through and spill from putting the two pieces together and it will make it harder to glue back together, if and when it breaks, despite not actually sticking more.

Tools:

Glue



Now it might look so simple, but there is 53252 different kind of glue, so picking the one that works for what you're doing is quite important. And herein lies the learning curve of this step and things you ought to know.

Cyanoacrylate

Fancy name for a product found in almost every household, cyanoacrylate is super glue or all purpose glue. It will work on plastic, resin, metal and your hands. Although it's great as a *one glue to rule them all* type of product, it takes a while to dry without activator. Activator is a different type of product that makes cyanoacrylate glue dry instantly. Once you try it, you can never go back.



Plastic glue

Plastic glue works on plastic. *Noshitsherlock*. Only plastic on plastic too. However, it works incredibly well. Other types of glue will create a bond between surfaces and stick them together, plastic glue works by slightly melting the plastic and melting back both pieces together as it dries/evaporates.

Both of these (cyanoacrylate and plastic glue) come in gel form or liquid form (or thick and thin, or whatever else a company wants to call it) and these don't behave the same. Much like assembly, everyone has their weapon of choice when it comes to their favorite thickness.

Liquid is much like water in texture if slightly thicker. This is great because it dries evenly and without trace, however it is quite slippery and will often result in your fingers getting glued together or to some other part or your model/household.

Gel is usually easier to work with because it doesn't run everywhere, but tends to leave bumps and dries unevenly when you apply too much of it. Gel is great if you are beginning and don't want to have your fingers glued on everything.

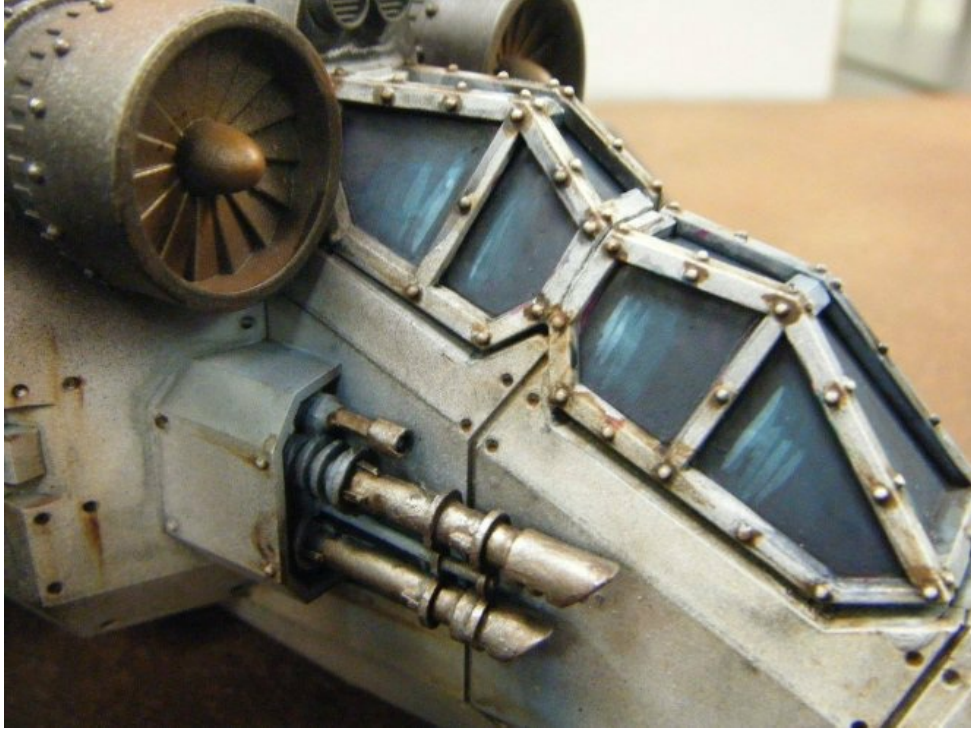
Myth busting time: Glue is pretty much always the same stuff, regardless of the name on the label. Thin plastic glue from Tamiya, Games Workshop, Umbrol or bought at the dollar store is the same in a different tube 95% of the time. The same goes with super glue, wether it's called Zip Kicker, Hot Stuff, Bob Smith Industries or again from the dollar store, 95% of the time, same product, different tube. This is a great opportunity to save some hobby money.

If you are working on high quality miniatures or if you are just starting out, you are probably done with assembly and your models are ready. Bully!

The last part of this e-book includes some additional tools and techniques dealing with more advanced aspects of model building.

Clear Plastic.

One modern trend in model painting is to paint cockpit windows with blazing mirroring colors. However, this effect is not appropriate on everything, and you will want you clear plastic to remain exactly that, clear.



Working with clear plastic can be quite tricky, as you will need both to think of your painting options before glueing this piece meant to remain clear, and about how you want to glue this piece so as to not damage it.

Painting options

Most models are designed so the clear plastic part can be glued on last or at the very end of the build so you can paint the entire kit beforehand. This is not always the case, as this often looks like the part was dropped on top of the model rather than built within – as is the case with an actual vehicle.

One option you have is partial assembly, leaving the part that connect to the clear plastic unglued. This allows you to paint everything and finish the build with the clear plastic.

The other option is masking. Using tape or liquid mask, cover the clear plastic while you are painting you model, remove at the very end and voilà. This is easier on some models than others, depending on the shape, size and quantity of clear plastic you have to deal with, as it can be quite time consuming. Be careful when selecting liquid mask, some of the cheaper brands will tend to leave residue or stain whatever they were masking.

Glueing clear plastic

Strong glue often produce fumes that will stain clear plastic. As such, you want to be careful before doing so. The best trick is to try out the glue you are using on pieces of the clear plastic sprue. Glue part of the sprue on plastic and see if fumes happen. The other option is using PVA glue (or white glue) as it dries off almost completely invisible and will not stain your clear plastic. This downside is the white glue is not quite strong and it might fail to keep larger pieces together.

Gap filling

Despite your best efforts, sometimes it is impossible to assemble a model without some gaps showing between different parts. Sometimes it's the mold, pieces where not sculpted to fit together perfectly, other times you just went a little too rogue with the hobby knife and removed a bit much, and sometimes the joint is still showing regardless of all the above.

You need to do something about these gaps, no matter how large or small their size, or they will stick out like a sore thumb during the painting of your model.

Tool: Modeling putty and sculpting tool



There are many types of modeling putties available, as well as sculpting tools. So much so in fact that it would require it's own book to describe them all and be thorough about sculpting. So this guide will stick to the basics you need.

Green Stuff

Green Stuff, or green resin, is a two part resin made of a yellow part and a blue part that, when mixed together, turn green (*duh*) and dries in roughly an hour, giving you plenty of time to fill any gap you have. There is a bunch of different colour of "stuff": brown stuff, grey stuff, white stuff, each with their own list of pros and cons. Green stuff is the most common and readily found, and is quite easy to use.

Liquid Green Stuff

As far as I know, only Games Workshop makes this, although many brands have their version of this, like Testor's Gap filler. This product is a thick paste that you can apply with a brush (ideally a beaten down one, you don't want to ruin a good brush on this) and later sand down.



Because of these equivalents, this guide refers to Green Stuff as hard resin you have to sculpt, and to Liquid Green Stuff as any resin you can apply with a brush, no matter the brand.

Gap filling

There are 2 main jobs here for the purpose of assembly:

- 1- Hiding joints
- 2- Sculpting holes

1- Hiding joints. This is the main issue you will come across, hiding the line between piece A and piece B. Liquid green Stuff is our weapon of choice here. Slap some on the joint you want to cover and do your best to smooth it out with a brush. Once it's dry, either add some more if the joint is still hollow, or sand off any excess to have a nice even surface. You can repeat this step many times to build up the liquid green stuff.

2- Sculpting holes is required when pieces don't fit together. We are using green stuff for this. The goal here is not only to fill the hole, but also blend it with the surrounding area by sculpting our putty in whatever texture is there. This is a lot of trial and error and a steep learning curve. There is a whole lot of books and references that cover sculpting as it is quite complex. Here are a few pointers:



- More Yellow in your mix makes a softer and more elastic putty. Do this for the bulk of a project and for smoother edges.
- More Blue in your mix makes a harder and crisper putty. Use this for details and hard edges you have to sculpt.
- Lots of water, no saliva. Resin is quite nasty and tends to stick to everything, specially the sculpting tool or your fingers. Use a lot of water to keep it from sticking. A lot of online resources and guides recommend using your saliva to lubricate tools, however please note that most putties are toxic, and you should not put that stuff in your mouth.

Pinning

The subtle art of jamming your rod in a hole. Dirty joke aside, drilling holes in 2 pieces of a model and inserting a rod, usually brass or a paper clip will strengthen the bond when you add glue. And by straighten, we mean near-indestructible.

Tools: A Hand drill (Electric or manual) and rods or paperclips, with a matching drill head.



Because most companies are pretty smart, the standard drill bit with drills is the proper size for paperclips, which is far superior to brass rod, as it does the exact same job, but costs insanely less. Brass rods are useful if you need either really thin or really large pins in your models, or if you want to replace a standard pole.

Uses:

Pinning comes from a time where models were in white metal, and glueing a small wrist with a small hand carrying a cloud-strife-overcompensating-sized weapon that weighted a ton was a nightmare. Although most range no longer have white metals, resin is another material with really large pieces are molded as one and weight a ton, making it harder for glue alone to hold.

The other use is replacing banner poles. In the same old age of white metals, it would be quite common for banner poles to be bent out

of shape from packaging, and replacing one is much simpler than trying to straighten one back.

Pinning to reinforce:

- 1- Start by dry fitting the 2 pieces you want to reinforce, and make a note, either mental or with a marker or a pencil on the model of where the pin should go – ie, the middle of the joint usually.
- 2- Next step, drilling a hole. Start with the smallest of the 2 pieces, and drill a hole on the mark you made (or mentally noted). The direction of this hole should be opposite of a direction where it's possible to drill on the other part of the model (see picture)
- 3- Cut a pin long enough. The easiest way to do this is inserting it in the hole you just made, and cutting it from there with 0.5 to 1cm (1/4 to 1/2 an inch).
- 4- Glue this in, being careful that no glue spills out of the hole, as it would ruin the connection between parts.
- 5- Dry fit again. This will be harder with a rod sticking out of one piece, but this step is to ensure our previous mark still fits, and give us the direction to drill.
- 6- Drill a hole in the second part. Drill too little rather than too much, you don't want to go through the model.
- 7- Dry fit again, although this time, the two pieces should be close if not perfectly aligned.
- 8- Repeat steps 6 and 7 until the 2 pieces line up perfectly and no pin is showing between them. You can either cut the pin or drill deeper if the model allows it.
- 9- Glue it down until eternity. Or like, a little less than that.

PRO TIP! *Oopsy Daisy, I did dun' it now, there's a whole through my model.* Obviously, the pro tip is not to drill through your models. But one should be prepared as it's quite easy to get carried away with a hand drill.

Fixing this is quite simple. When you glue the pin in the part that you drilled through, make sure it does not stick out from the piece. Having it lined up roughly flat is good enough, but you can leave a small gap, no problem. Complete the pinning process as if you didn't just punch a hole through your model. Once it's done and dried, fill your mistake with liquid green stuff or regular green stuff, sand it down and voilà, just like it never happened.

This about covers it for assembly. You are pretty much ready to go out into the world of miniatures and tackle any kit that comes your way! Bully!