

So you've got a box full of colorful Bandai plastic and you're ready to graduate from snapping together an action figure to building a model replica of a Mobile Suit. Now what?

Well, for starters, you have to get the pieces off the plastic runners called sprues. Like many steps in model building you want to do it in a way that leaves no trace of the work you've done, like that piece was never on a plastic sprue but was cast out of metal in some (really tiny) factory somewhere.

You're going to need some sprue cutters. They're like smaller, thinner wire cutters and the blades are usually flat on one side and beveled on the other so you can get the flat part right up next to the piece and make a clean cut.



Here's a pair of Tamiya clippers on the left that are pretty typical of the various brands of sprue cutters. MicroMark sells the cam-style cutters on the right.

You're not going to start off by cutting right up against the piece. The first cut should be a bit away from the piece because it takes some force to cut through those relatively thick connections between the piece and the sprue and that will tend to warp or tear the plastic. So cut away from the piece and warp the nub that you're going to cut off.



Make your first cut far from the piece.

What's a nub? A nub is the bit if sprue still stuck to your piece after you cut it off the sprue. If a judge at a model contest can see the nub or any evidence of its existence (like the gouge where you hacked it off with an X-Acto knife), you lose.



When I first cut a piece off of the sprues, I take a good-sized piece of the sprue with it.



I then cut closer to the piece, leaving little to sand off. This is maybe a little too close for a second cut.

Your second (and maybe third and fourth, depending on the angles) snip with your sprue cutter are going to be used with that flat side close to the piece to get it down to almost nothing. Form there you will sand it down to nothingness.



After a 2-3 cuts there's only a bit left.



And after sanding there's nothing left.

How close you get with the sprue cutters vs. how much you leave and then sand off is personal preference. I usually get right up close because that means less sanding but it also means more chances of warping or gouging your piece. I prefer to fix a few dings in my pieces with putty later and spend less time sanding big nubs now.



Whatever you do, don't hack the nubs off with an X-Acto knife... I'll use an X-Acto knife to carfully shave some of the nub off but I'll never try to take the whole nub off. The last part always gets sanded off.



Here's a little divot where I got too close with the sprue cutters and yanked out a little piece of the plastic along with the nub. As you can see it's not that big and a little putty and sanding will take care of it easily.



You may also have to deal with flash and mold seams where the two halves of the mold didn't meet perfectly. The flash (and the nub, which is the lighter mark) has been removed from the right side of this piece.

And now the sanding begins. A "real" model builder does a LOT of sanding. My main tool here is 320 grit sandpaper wrapped around and super glued to a popsicle stick (or you can buy sanding sticks in assorted shaped and sizes). I also like to use 320 and 600 grit sanding pads from Norton. They may be hard to find but if all else fails try Amazon.



My homemade sanding sticks and everything you need to make them.

Sandpaper's roughness is measured in Grit. But it's kind of backwards since the numbers really indicate the smoothness of the finish you'll get from the sandpaper. It's like image resolution. High grit means smoother pieces after sanding. 1000 and 2000 grit sandpaper literally polish the plastic to a shine. But high-grit sandpaper can take forever to actually remove a significant amount of plastic, so we start with low-grit and work our way up.

My SOP is to hit the nub with the 320 grit sanding stick or 150 grit sanding pad if the piece has some difficult contours (think Zeon suits). For the same grit, the sanding pads seem to be finer. Either that or the soft pads grind the plastic less forcefully than sandpaper on a hard wooden stick. Remember with the stick that you want to keep the plane of the stick along the contours of the piece so that you don't sand a round piece flat or sand a valley into a flat piece.



Sanding pads like this are great for curved surfaces and smoothing out sanding prior to painting.



I cut them into small pieces to use on my models. Sometimes I cut them in tiny slivers to reach small spaces.

After I've used 320 grit sandpaper to eliminate the nub, I buff over the area with the 320 and then 600 grit sanding pad. It gets the size of the scratches in the plastic caused by the sandpaper small enough that flat paint hides them.

What's flat paint? Is there bumpy paint? Flat means it does not have a glossy sheen so it does not reflect light. Military vehicles usually have flat paint. Cars usually have gloss paint. Can you guess what semi-gloss is???



The red paint is gloss (you can see it to the left of the paints name, "Red Madder"), the blues is also gloss, the green is semi-gloss.

Gloss paint makes any tiny imperfections in the surface of your model reflective and highlights them. If you are going to have a gloss finish on your model, I suggest buffing it with at least a 1000 grit sanding pad. People also use Brillo pads and steel wool and special polishing rags and compounds. Car modelers will even wax their model, like a real car. It's up to you how far you want to go with it. Google it. Look up Natural Metal Finish (an airplane technique) or look for guys who build cars and learn their tricks.

Now that you've taken the parts off the sprues and removed the nubs, you can put some pieces together for planning purposes (and Otaku fun). Before you do, you want to cut down the pins that hold the pieces together. Why? Because Gundam kits are generally snap together, they're meant to stay together pretty much permanently with just friction.

But for now you're just snapping the model together for planning purposes. Later when you want to take the arm or leg apart to paint it you're going to have a heck of a time doing it of you don't take some steps to reduce the holding power of those pins that hold the pieces together.

You can do this by twirling your X-Acto knife tip inside the hole that the pin goes into to scrape away a bit of the inside of the hole and make it wider, or by cutting the pin at an angle so there's less of it to hold the pieces together. I usually do the latter (because the former dulls my blade) but it's personal preference.



I cut the pins on my Gundam kits off at an angle so that I can slip the parts apart later for gluing and painting.

While the model is put together, take note of how everything moves and works. Notice where one part sits on top of or closes up around the other. Think about color separation. If you're going to paint your model, it's really helpful if the parts that will be different colors can be separated and painted apart from each other. Because of Gunpla's multiple layers of moving parts, this isn't always possible if you build out of box.



One of the reasons to snap together your Gunpla before you commit to glue is to know where to put all the polycaps. Oops...



It wasn't pretty but I got this polycap in between these two glued-together pieces.

Building a model "Out of Box" (often just called OOB) refers to building a model without modifying it. It can also refer to how the model is designed to go together if you follow the instructions. You might comment "I built this model OOB", or "See how these parts go together OOB where this part blocks that one... how dumb!"

Bandai has been really good in the last few years about engineering kits in a way that it's fairly easy to separate pieces that will be different colors, build them, paint them, and put them back together after painting them without screwing up the paint. However, this won't always be the case OOB. There are some simple mods people are used to performing to allow for easier painting without masking and to allow you to fix seam lines before you paint any pieces. Bandai actually seems to be making kits with those mods in mind where just a few simple snips makes the piece so that you can "plug it in" to another piece after you glue it together. By the way, "mods" is just shorthand for "modifications".

One common mod that allows you to separate parts is by taking a piece that is shaped like an "O" that fits around a pin between two pieces, and clipping it into a "C". If you clip the opening of the C just right, you can pop it back onto the pin after painting without using any glue.



The bottom of this gray elbow joint was a solid circle but I cut part of the circle out to make a "C" shape out of it so I could snap it onto the pin in the forearm after painting the parts separately. I even went so far as to put a magnet on the top of the elbow joint so I could paint the part separately.



There was no way to mod my way out of this one. The pegs that hold the arms onto this torso are moveable and trapped between the front and back halves of the torso. I just had to glue it together so I can fix the seam and then later I'll have to mask the different parts off and paint them.

While you're snapping the model together you also want to take note of seams. This is where two pieces come together to make what would be one solid piece on the "real thing". Traditional airplane and ship models are chock-full of seams because many of the subassemblies have a right and left half or a top and bottom that have to be glued together with a seam.

Again, Bandai is pretty good at engineering their way around this problem. On a lot of MG and RG kits, there are virtually no seams because there's literally a piece of plastic to represent each part of the "real thing" and slide mold technology allows them to mold things like gun barrels and propellant tanks as a single piece.

Even on HG kits, Bandai is pretty good at hiding seams that occur in conspicuous places under another part or by molding in detail that makes the seam look like a natural part of the topography of the model's surface. Later on I'll discuss fixing the seams that do exist.

The first step in combating seam lines is to use glue. The glues I use most when gluing my Gundam model kits together are Testors Model Master glue and Tamiya Extra Thin Cement.



Here are the two plastic glues I use. At times I also uses CA glues (super glue), epoxy glues and white glue on my models.

The Testors glue is a thicker gel-like glue with a long and thin applicator tube. I mainly use it to glue small bits onto larger pieces. I will also use it in combination with the Tamiya glue for gluing together traditional non-snapping models as the gel nature helps hold the pieces together as you go to town with the Tamiya glue.



The tip of the Testors tube applicator lets you put just a little bit of glue on the model.

The Tamiya glue is the secret weapon for fixing seam lines. For gunpla, I put the two pieces almost all the way together so that a hairline crack still shows between them. I then take a brush full of Tamiya Extra Thin Cement and touch it to the crack and capillary action sucks the glue from the brush into the crack.



Leave a tiny crack between parts for the Tamiya extra thin cement to flow into.

You'll want to dab the glue around several places on the crack until you're pretty sure you've got the whole crack coated. The glue melts a bit of plastic where it touches the model and so when you press the pieces together those melted edges combine like a weld seam and when the glue dries you've got solid plastic. It's the strongest glue joint you can get on your kit.



Touch the brush to the crack and by capillary action the glue will flow into it.

You want to squeeze those parts real good and preferably clamp them together. I like these little green clamps I got a Home Depot for less than a buck each. I have 8 of them and that seems to be plenty. As you squeeze the pieces with them, a gluey plastic goo oozes out. You want this. It fills the gap between the pieces and eliminates (somewhat) the need for putty later.



Clamp the parts and watch the melted plastic ooze out.



"Wow, I thought this was supposed to be a Gundam tutorial..." Yeah, I know but I'm trying to give you the best pictures I have of the process. I got these little green clamps from Home Depot for about 89 cents each. They're smaller than they look, that's a tiny model they're holding together.

A few things to note about glue...

First, it's toxic and will send you on a bad trip, so use ventilation.

Second, it melts plastic but doesn't do so well with paint. It will melt just enough paint to screw up your paintjob but not enough to give you a good bond between pieces. It's the worst of both worlds, like Van Hagar. When gluing painted parts, either carefully scrape the glue off the surfaces that touch each other or use hobby-type super glue (aka cyanoacrylate or CA glue). There are different grades, I use medium (aka gap-filling).

Third, the Tamiya glue can run all over if you go too crazy with it and then you'll inevitably touch the part where some glue overflowed and melt a nice fingerprint into the plastic. So aim that little brush carefully.



As if letting a drop of glue run all over my model wasn't bad enough, I went and stuck my finger in it, melting a fingerprint into the model.

When the glue has fully dried and the ooze is hard solid plastic you can start to sand it down. Treat it just like the sprue nubs, 320 grit then 600 to smooth it out. There can be bits of plastic (or later putty) in small crevices where it's hard to get to. Along with sanding sticks and pads I also use small pieces of sandpaper folded over, jewelers' files, or small chisels.



Once it dries you have solid plastic sticking out from between the pieces. Now you can sand it off.



This is the grip I use on my sanding sticks.



Folded sandpaper is good for reaching tight places. I'll also double-fold it to make it thicker and stiffer. No joke.



These little jeweler's files are like tiny sanding sticks and are also great for hard to reach spaces.



Hasegawa makes small hobby chisels as part of their Trytool line (the scriber on top isn't a chisel but it's the only Trytool box I still have that I can show you). I don't use the chisels a lot, but when I use them to shave down putty or something else in some tight spot, there isn't really anything else that would work well.



I've got one with a straight tip and one with an angled tip.



I used them in this recessed circle where nothing else would reach.

Now that you have sanded the plastic ooze down in you can evaluate the seam. Odds are it's not perfect. The ooze never oozes perfectly evenly so some of that crack between the pieces probably still shows (and your crack should never show).



These parts came out pretty good, but you can still see the seam line, especially on the part on the right.



There's a small lip where one side of this seam sits higher than the other.



It's more noticeable when I flip it over and the part over and the lip makes a shadow.



After sanding, it's still there. Time for putty.

At this point there are a lot of products you can put into a crack or uneven seam to eliminate it. They include:

Putties like Tamiya Basic (my favorite), Squadron Putty, Bondo Glazing and Spot Putty and other hobby putties can all be used for medium-sized seams up to say about 2mm.



This is my favorite basic hobby putty. On top of having a very fine grain, it also has metallic bits in it that make it shine where you've sanded it. It's a helpful visual aid when sanding off excess putty.

I usually apply it with a toothpick and try to get just enough to fill the gap. The more you put on, the more time you'll spend sanding the excess away. One thing that can save time is to wipe the seam with a Q-Tip dipped in Mr. Color thinner after putting the putty on. It dissolves and wipes away excess putty.



Putty over a seam.



If you can avoid getting putty into recessed panel lines it will be easier to clean up the parts later.



Toothpicks are good for applying putty and for large applications of putty I might also use the sculpting knife on the top of the picture. Q-Tips and special pointy hobby Q-Tips made by Mr. Hobby and Tamiya can help wipe off excess when dipped in thinner.



As you apply the putty it will dry up and get hard to spread onto the part. Wipe it off on a paper towel and get some more from the tube. It's a pain to keep capping and uncapping the tube, but keep the cap on the tube as much as possible to keep the putty that will come out next from being half dried out.



If you have a dispenser cap on your bottle of thinner, you can stick the Q-tip in there to get some thinner on it. I use plain thinner instead of leveling thinner for this. Save that awesome leveling thinner for painting!



Crusty half-dried putty...



Smoothed out with a thinner-soaked Q-Tip. This will be easier to sand.



The piece in the middle of the two intakes fit pretty poorly (strange for a Bandai kit...). Since it was hard to reach (and hard to sand) I made sure to wipe off excess putty with a Q-Tip dipped in Mr. Color thinner before the putty dried. DO NOT use Home Depot lacquer thinner for this. It's stronger and can MELT your plastic parts.

There's also Tamiya light-curing putty. Put it on, shine a light on it, and it's ready to sand in about a minute. It's kind of like the white resin fillings you get from the dentist.



You can't get this stuff in the USA anymore. I ordered this from Japan. I'm not a big fan of it on plastic but it works on resin.

My friend Clem (Gamerabaenre) loves the stuff. I use it sometimes but to me it's frustrating when you put it on the model, hit it with the light, and then you go to sand it and it falls off the model in one piece. Clem told me I was doing it wrong. I told him he sounds like my wife.

But seriously, he builds a lot of resin kits, and I've used it a few times with resin parts and it seems to stick better to resin, and it's softer than other putties, which is good for resin because resin is softer than most plastics. If the putty is too hard you have to sand the heck out of it and risk messing up the plastic around it.

If you have a larger gap to fill you want to get something structural in there to fill the gap like a sliver of plastic sheet glued in place before your start puttying (K & S and Evergreen make plastic sheets and rods you can buy at hobby stores). Large gaps are unlikely for OOB Gundam builds unless you're building a really old-school or knock-off kit.

I will also use gap-filling CA glue to fill the largish gaps. Put some in place with a toothpick and hit it with Kicker (accelerant). The kicker not only makes it dry faster, but helps it dry as a solid piece in the shape that it's in. If you let it dry on its own, it will tend to evaporate and conform to the gap as it dries, leaving a glue-covered gap that's about what you started with, but shiny.



On the left is some generic hobby CA glue. The name brand is ZAP. On the right is generic accelerant. The name brand is Zip Kicker.



There's a huge gap at the "knuckles" of this left hand where I've cut off and repositioned the fingers to grip this gun. So to start off I fill in the gap with CA glue.



The kicker is meant to be sprayed out the top but that's way too much for model kit use (this stuff is meant for building big RC airplanes). Instead unscrew the cap and use the uptake tube as an applicator.



Like so...



It may take a few rounds to build up enough CA glue in a big gap, but eventually you get to this point.



And from there you sand it to fit the parts around it.

Gaps can also be filled by pieces of stretched sprue laid over the gap and glued/melted into place.

To make stretched sprue you have to heat a piece over a candle then when it sags and is about to melt, you pull them apart with a steady motion. The faster you pull, the thinner the string of plastic you get. Stretched sprue has many uses. It can fill gaps, it can replicate weld seams, it can make antennas and wiring. And if you've got a candle, it's free!

Hairline cracks can be fixed with Mr. Surfacer 500. This is a great product. It's like putty that has been thinned down enough that you can paint it on with a small brush. It gets rid of small cracks, marks from over-aggressive sanding, glue fingerprints, and sink marks (places where the still-warm plastic sagged as the part was removed from the molds when it was manufactured).



This is some great stuff, get some...



What looks like gray paint is actually Mr. Surfacer 500. I may also paint it on some surface flaw (like the mold seam cover by the lowest blob in this picture). As I sand the flaw down, the Mr. Surfacer shows me where I still haven't got down to the surface of the model yet. And sometimes it turns out that the plastic on either side of the flaw isn't quite flush. The Mr. Surfacer will fill the side that is lower.



I removed excess putty with thinner but went too far and you can see the seam through the putty.



So I painted on some Mr. Surfacer 500.



I puttied the worst parts of this seam but it's pretty scratched up from sanding.



So I painted Mr. Surfacer over the whole area. It will cover up the scratches and blend the edges of the putty to the plastic. Sometimes I paint Mr. Surfacer 500 over putty just to make sure I get a nice feathered edge where the putty/surfacer meet the plastic after I've sanded it down.



This piece only had minor flaws, so I only used Mr. Surfacer 500, and no putty.

There's even a product to fill in the (metaphorical) gap between putty and Mr. Surfacer. It's called Mr. Dissolved Putty.



Mr. Dissolved Putty. I'm pretty new to this product.



It dries a translucent color and is relatively easy to sand.

Finally, some models, especially HG models have hollow spaces on them that needs to be filled. They're so big that filling them with standard putty is hazardous to your model because if you put too much putty in one place at one time the solvent in the putty can melt the plastic. Plus putty shrinks a bit as it dries and more putty means more shrinkage. So instead fil large areas with Tamiya two-part epoxy putty. Or some other brand. Hobby stores will probably carry two or three brands of epoxy putty. You mix it in equal parts, put it in position like clay and then it hardens like plastic.



This is Tamiya-brand Epoxy Putty. Milliput is another popular brand.



The bottom of this ammo drum was completely hollow so I filled it with Epoxy Putty. That's the yellowish stuff. The gray is some Mr.Surfacer I put on top of it.

All of these methods of filling a seam have one thing in common... put it on, let it dry (or make it dry), sand it off. You'll sand almost all of it away, down to the level of the plastic and leave only the putty that sits within the crack. Surface preparation is a big part of model building and I've tried a lot of products to try to find the perfect ones for every situation and try to reduce some of the time and effort involved. But if you're just starting out, you can do just about everything with just the Tamiya Basic Putty and Mr. Surfacer 500.



Glue took care of the rear of this gun with no Mr. Surfacer. The middle portion was uneven, so you see the Mr. Surfacer below the seam only. On the barrel you can see a fine line of Mr. Surfacer filling the gap in the seam.



On round parts that you sand with sanding pads, it's typical to see a "cloud" of putty over the seam. The edges beyond the seam should be soft (or "feathered") which indicates the putty is tapering off into the plastic and will look smooth under the next round of primer.



There's some putty left over the seam. There's also putty filling in a sink mark above and below the seam to the left of center of this picture.



The sink mark was created by the bulky pins on the back side of the part. Sink marks are most common on the opposite side of heavy molded details or parts.

Now that your part is glued together and you've puttied the most obvious seams, you're ready to start applying primer. Priming gets us into airbrushes and paint mixing and all kinds of other topics (and I'll get into each of them below) but for the sake of order I'm just going to say that you just primed all the pieces of your model.
And here's the bummer, you're going to sand some of that beautiful primer right off your model. Heck you will sand most of it off some pieces. And then you'll put more on and sand it off again! This is because primer reveals flaws that you just don't see on bare plastic. You already puttied and Mr. Surfacer 500'ed the worst of the seams and flaws, but now that you've primed your model you'll see other ones that you missed, or notice that the putty job that looked good isn't quite right. Damn primer... Nah, just kidding. Primer is great stuff. I prime all my models.



After priming, these cracks in the seam really stood out.



Not quite enough putty on this part, there are some low spots. Also, you can see some little craters from air bubbles that were in the Mr. Surfacer 500.



Sadly, you're going to sand off a bunch of the primer that you put on. Lots of parts still have subtly lumps of putty that need more sanding. Others still have cracks or pits that need more putty and another round of priming and sanding.



I extended this tank. Primer helped me smooth the transition from the kit parts to the white tube I added. It also helps hide the stark contrast between the black parts and the white tube, which can show through after you paint if you don't even it out with primer.



A Zaku head after a couple rounds of putty/sand/prime. The clearly-defined gray areas are putty that filled places where the Zaku's previous owner hacked the parts off the sprue with an X-Acto knife.



Here's a part of that head before putty. Ouch. This is why we use clippers and sandpaper to remove nubs.



By the way. You may have noticed you're going to be sanding a lot. I started noticing after some of my sanding sessions that I had a scratchy throat so I picked up a simple dust mask. You can also wear your respirator, but they're kind of clunky to wear for so long.

Now that you've primed your model you'll want to do some more seam fixing with the putty and sandpaper and then wipe off the dust and touch up that area with more primer and check it out again. It usually takes 3-4 rounds of prime/putty/sand/re-prime before I'm happy with a kit and ready to paint it.



When looking for flaws in you surface work, it helps a lot to hold the piece up to the light.



Tamiya putty has metal flakes in it like you find in metallic flakes which help you see how far into it you have sanded. The metal flakes do not shine on the un-sanded rough surface of the primer. Ingenious!



This skirt had some subtle sink marks in it that I noticed after priming.



Since they weren't very deep I took a shortcut while priming and just airbrushed a thick old blob of Mr. Surfacer 100 onto each of the sink marks.



After sanding you can see the shape of the sink mark in the leftover Mr. Surfacer.

Finally, once you're pretty close to done with this process, you want to look at the recessed panel lines on the model. Most likely some of them went through your seam line work and were covered up. You can use an X-Acto knife to carve that seam line back onto your model include an. Start by slicing carefully with the sharp side then drag it backwards (dull side) along the groove. Or use a needle in a pin vise (a good go-to tool for beginners). Or if you have one you can use a BMC scriber. Dymo embossing tape can help you make straight lines by guiding you scribing tool. I also like to use a dental pick to scoop sanding dust out of panel lines before I prime and paint.



These tools can restore lost panel lines.



See how part of this panel line disappeared under putty?



Fisrst I scored it with my X-acto knife. Then I went over it with my needle-in-a-pin-vise.



See the gobs of sanding dust on the part? When dust gets into recessed panel lines, a dental pick is great for getting it out.



It takes a few rounds of putty/sand/reprime to get all your parts perfect. After priming my Zaku parts for the first time I inspected them and sorted out that parts that were good to go (left side) from the parts that needed more work (right side). Yeah... more parts on the right side. Bummer.



After the second round, the parts in the middle were good to go so I only had to work on the ones on the far right.



The last round required just a few small touch-ups on a handful of parts.

Somewhere in the process of surface preparation, you primed the model. So let's go back to that and talk about what you have to do to prepare the parts for priming.

Before applying any primer or paint, it's important to wash your parts. They most likely have some mold release agent on them that helped them slip out of the molds like alcohol helps people slip out of their clothes. Unfortunately the release agent also helps the part slip out of the paint you're going to put on it.



A whole bunch of paint came off of this resin leg missile launcher because I didn't wash the mold release off well enough. It really sucked...

I used to wash the parts right after I got them off the sprues but now I usually I do some glue and putty work before I wash the parts since I figure that work gets them dirty, too and early on I'm sanding off nearly all the putty I apply. But I definitely wash the parts before I cover them all in primer.

I wash parts using about 40% "Purple Power" industrial cleaner and 60% water. Purple Power comes in different brands, I get one called Zep from Home Depot. This stuff has acid in it so DO NOT DIP YOUR BARE HANDS IN IT! Seriously, even when diluted it will make your skin tingle and then a few hours later you'll notice a fine dust coming off of your hands. THAT'S BURNT SKIN! Eye protection would be a really good idea, too.



Industrial purple cleaners like this contain acid. Don't clean your contacts with this stuff.

I also use an ultrasonic jewelry cleaner I picked up at Harbor Freight (look for a 20% off coupon in the newspaper or online ads). It's a bit of an investment but it's also great for cleaning your airbrush parts and, um, jewelry. I put the parts in a Tupperware tub so they're submerged in the diluted purple power and then put the tub in the ultrasonic cleaner which has been partially filled with regular water.



It's an investment, but I love my cleaner, it's saved me hours and hours of drudge work cleaning parts over the years.



I put the parts to be washed in a Tupperware-type container and then fill it with a mix of ~40% purple cleaner and water.



Make sure you put water in the cleaner itself. You put water in the cleaner and then the Tupperware tub in that water and then the parts are in the tub submerged in 40% purple cleaner.



Run it for 180 seconds. Stir the parts and run it for another 180 seconds. Beats scrubbing for hours with a toothbrush.



Wear gloves when working with purple cleaner!!!

I run the cleaner for 3 minutes, stir them up, run them 3 more minutes and then take the tub out and strain the parts out from the Purple Power. I go through a couple rounds of thoroughly rinsing in the sink. CLOSE THE STOPPER in the sink when you are rinsing parts so none of them go down the drain. If the sink gets full, make sure no parts are in the standing water then open the stopper and let out the water. You can also use a strainer or mesh "pooper scooper" from the reptile aisle of your local pet store to catch parts that otherwise would fall in the sink.



When you rinse your parts after cleaning, be sure to close the stopper on the sink!!!



After rinsing the parts I lay them out on a paper towel to dry.

If you're just starting out, regular water, a few drops of dish soap, an old toothbrush (or a new one if you like the toxic taste of mold release), some elbow grease, and time spent will do just about as good a job.

Now your parts are clean and you're almost ready to start priming them but there's another thing to cover first because unless you want to hold the pieces in your hands and get paint on your hands and fingerprints in your paint, you're going to have to put the parts on something.

My favorite thing is alligator clip-tipped skewers. Fry's and Radio Shack sell little alligator clips and grocery stores sell kebob skewers. Cut the skewers in half, sharpen the one that has two dull ends and use pliers to squeeze the alligator clip onto the skewer.

It took me a long time to build up a massive amount of skewers because the clips can cost about \$4 for a 10-pack and they're kind of a pain to put together (you can buy them pre-made from Mr. Hobby and other makers, but they're expensive, it's your call). After a few rounds of buying and putting together 30-40 skewers at a time over a couple years I have enough for even the partsiest MG kit.



While alligator clips are most handy, some parts are better stuck on to wire, spare sprue rods, flat plastic, toothpicks, or just tacked on with sticky tack or rolled masking tape.



With the parts on skewers they're ready to prime.

I've also got skewers with coat hanger wire for small pieces (like Zaku cable rings), sprue rods (they fit many polycaps perfectly), toothpicks (good for beam sabers and gun barrels) and flat plastic rod. I also use sticky-tack poster mounting putty to stick parts directly to skewers (and until you have the time/money to make or buy lots of alligator clip skewers you can do that for all your parts).

By the way, the green stuff you see the skewers stuck in is florist's foam. You can buy it at Michael's, Hobby Lobby or other craft stores. It's sold in big rectangles so the pieces you see are actually one quarter of the original piece.

I'll refer to sticky-tack several times. It's tacky putty similar to silly putty and used to hang posters to walls without putting nail holes in the walls. There are many brands and it goes by many names but it's available at Target, Walmart and office supply and craft stores.



Sticky tack comes in various colors (blue, white, yellow, orange) and is made by many companies. It's kind of like Silly Putty and has many uses for model builders.

So now we're finally ready to start using an airbrush. I use an Iwata Eclipse HP-CS airbrush that does everything I need it to do from really fine shading to reasonably big spray patterns. I really like the top-mounted gravity-feed paint cup. It's way easier to clean than a bottle stuck in the bottom of the airbrush (I've had one of those) and you can mix small amounts of paint for touch-ups right in the cup. I use an Iwata SmartJet compressor that has an automatic cut-off once a certain pressure is reached so that you don't have to keep turning it on and off. Deciding which airbrush is right for you is a research project and you can google about how to hook everything up and which accessories (like a tank, a water trap and a regulator) you might want to pick up. You can pretty much see my setup in the pictures below.



I love my airbrush...



Later on I even added this tank to give me a more steady airflow.

Unless you can airbrush outside or in a garage you'll really want some kind of spray booth. It's essentially a box with a fan that sucks the spray fumes into a hose and sends them outdoors. Here are two booths I made and my website has tutorials on how I built them both:



Here's the spraybooth I built for myself when it was shiny and new. The top is a range hood that goes over a stove. You need something with a fan and a hose (the silver tube sticking out of the top) to such the fumes out a window or a hole in the wall. I have a separate tutorial explaining how I built it.



I built this super simple booth for my brother-in-laws for about \$60. I have a tutorial for this one, too.

All of this equipment costs money and it's a big hurdle for beginners. Between my airbrush, my compressor, my spray booth and enough supplies to get started in "serious" model building I spent about \$600. That's a lot of money, and I wanted those things for years before I thought I could afford them. But here's something interesting... Assuming you're going to stick with the hobby for a few years, THEY PAY FOR THEMSELVES.

How is spending \$600 on hobby supplies going to save me money???? Okay, prepare to have your mind blown. When I was a snapper, in about 5 years I snapped about 100 Gundam kits worth \$2000 easily (back in early 2000s dollars). It was easy to buy one every month or so for only \$15 -\$30 and get some bonus kits with my Christmas and birthday money. And if I were to go buy an airbrush, it would wipe out my model building budget for a year or two, right???

But here's the thing... In the 8 years since I bought my airbrush, I've only built about 30 models. Now, I've had two kids during those 8 years and that means less hours per week modeling, but even if I put in the same amount of time, I doubt I would have built more than 50 or 60. When you start airbrushing, *you are going to trade quantity for quality*. You'll probably only build about half as many models as you did before. And if you get into the kinds of heavy modifications you can do when you paint your models or competitive model building, you'll build even slower.

Converting to an airbrush is expensive, but you'll pay for fewer kits in the long run. So if you're one of those guys that goes and buys a kit or two every month and snaps them together, you could afford probably afford an airbrush. And once you have the tools, you'll be able to create one-of-a-kind pieces that add value and a personal touch to Bandai's plastic.

I have to admit that I'm a crusty old jerk about this stuff. You see, us Gunpla modelers take a lot of crap from other model builders (guys that build airplanes and tanks and ships) at general model contests because our models snap together. One guy recently walked by our models at a competition and was like, "Those Gundam models just go together like Legos." As you can see from this tutorial we put a lot of work into our models so comments like that kinda tick us off.

So as a person who's kind of defensive about quality Gunpla building and trying to get more respect for our hobby I hate to see people that snap their kits and don't want any more out of their Gunpla... On Facebook I see people annoyed by the waterslide decals in their ver. Ka kit and they wish it came with stickers... I saw somebody post that their friend gave them a slightly used MG Jesta but it's "practically ruined" because a few pieces had primer on them... I see people post a bunch of pictures of totally stock unglued, unpainted snapped kits... That they just put together... Like Legos...



By the way, all of those were real posts from the "I build Gundam Models and I am Proud!!!!!!!" Facebook group. The guy with the primer question was like, "How can I take this primer off my model, and don't suggest any of those 'hobby products' I won't use that stuff."



Dude... you re not neiping us get any respect.

OK, mini-rant is done. Back on topic. If you have an airbrush and pieces on a skewer you're ready to prime. You can spray any number of rattle can spray paint primers directly onto your model. People use generic primers like Krylon or model-specific ones like Tamiya. They also decant them and spray them through their airbrush (I discuss decanting further down when I get to clear coats). I definitely prefer to airbrush my primer. Spray paint cans shoot out a LOT of paint and they're hard to control.

I use Mr. Surfacer 1000 or 1200 to prime my models. It's like Mr. Surfacer 500 but with a finer "grain". 1000 covers fine scratches better, but can also cover very fine details. For most Gunpla, it's probably fine. For 1/72 scale airplane kits with very fine panel lines, or an RG kit with fine details, I would probably go for 1200.



Mr. Surfacer comes in three "grains". These are the two that you would airbrush onto your model.



White Base! I mean Base White. It's great for use under white, yellow and red, colors that are notorious for poor opacity (you can see through their pigments unless you put a LOT of paint on). These colors are hard to paint on top of gray.

I mix Mr. Surfacer in a big batch in a 110 mL Mr. Color thinner bottle. I pour out the thinner then put in the whole bottle of Mr. Surfacer and then fill the bottle up most of the rest of the way with Mr. Color Leveling Thinner. The final ratio is probably about 60-65% THINNER and only 35-40% Mr. Surfacer. I also add about 15-20 drops of Mr. Retarder mild because I live in relatively hot and dry Southern California. This slows the drying time a bit and makes the paint/primer dry just a bit smoother.



If you only buy one of these get the leveling thinner, it makes the paint level out into a smooth finish with less chance of orange peel effect. Anything I'm going to airbrush gets leveling thinner. For re-thinning paint or Mr. Surfacer 500 that has become thick from sitting around in its jar, I use regular Mr. Color thinner.



I combine a whole jar of Mr. Surfacer 1000 or 1200 with the Leveling Thinner to make big jars of ready-to-airbrush primer. The left bottle is an 80 mL spare (empty when you buy it) bottle. The right bottle is a much-preferred but harder to find 110 mL thinner bottle.



With hot/dry California weather, I add a bit of this stuff to anything I airbrush for smoother finishes.

A lot of people new to using an airbrush ask about paint to thinner mixing ratios for airbrushing. There is no set formula (so ignore those percentages I just gave you, lol), because even a brand new bottle of paint can be thicker or thinner than the one next to it.

So let me explain paint mixing:

For me, with Mr. Color paints, it seems like when I think I have enough thinner, I should probably add more. This is especially the case with Mr. Surfacer which is notorious for "spiderwebbing" if you don't add enough thinner. This is where the primer doesn't properly atomize on the tip of your airbrush and the airstream extrudes it into fine string like tiny silly string all over your model.

Even if it doesn't spiderweb, thick paint can create a bumpy "orange peel" effect on your paintjob. Again, this is because it does not atomize into fine enough drops as it leaves your airbrush.

On the other hand, paint can be too thin. If paint is way too thin, you will literally see it puddle and be blown around the surface of your model by the air stream coming out of your airbrush (then again, this could mean you're just putting WAY too much paint out of your airbrush). At the very least, you'll see thin paint pull away from raised edges.

Thin paint poses another problem, and it's counter-intuitive. The thinner you make your paint, and the "wetter" it is, the faster it dries. It took me a long time to wrap my head around this. This is because the thinner that makes the paint "wetter" is usually some fast-drying solvent that dries faster than the pigment-filled resin that makes up the thick part of paint. Very fast drying paints like lacquers and acrylics can literally dry in mid-air between the airbrush and the model. When it hits the model, it sticks but does not spread out nicely like wet paint, so it forms a tiny little bump. The end effect is a rough, sandpapery finish. You'll pay for this rough finish at decal time. This is why I always put a few drops of Mr. Retarder in my Mr. Color paints. It helps make sure my thin paint gets to the model before it dries.



I mix individual colors of paint in a shot glass and stir them with this Tamiya mixing stick.



Mr. Hobby makes these dispenser caps for their thinner bottles. Turn the valve so it's open just a crack so you don't pour out too much thinner.

Finally, there's another factor (as if it weren't hard enough...) and that's air pressure. Paint atomization happens when a little trickle of paint hits the airbrush needle where air is blowing by at high speed. The fast air flow literally rips the paint into little droplets and shoots them out the airbrush. Higher airflow can scatter thicker paint. Really high airflow can scatter skin, wood, and even rock (so don't point your airbrush at your eyeball, duh). We don't measure airflow directly, but we do adjust the pressure in our compressed air system and more pressure means faster airflow.

So generally, if you want to paint fine details, you mix very thin paint (and you really want some retarder for that) and spray it at really low pressure, like 10-ish psi. If you're blasting on the paint, it can be thicker and you can shoot it at higher pressure. Personally I prefer relatively thin paint at relatively low pressure so I'm usually running from 10-20 psi and spraying a few thin coats of paint but plenty of people are running at 20-30 psi with thicker paint and using less coats.



A regulator with a pressure gauge lets you dial in the right pressure for airbrushing. You spin the black knob above the dial to increase and decrease the pressure (and hence speed) of air coming out the airbrush.

So fine details and small paint patterns mean lower pressure and thinner paint. Bigger paint patterns can use higher pressure and thicker paint. Typically the airbrush (and needle) you are using matters, too. Some airbrushes have big needles and use more pressure because they're designed to paint thicker paint in a bigger pattern and vice versa.

By the way, I mix paints in a shot glass. It's a great size and shape for mixing the kinds of volumes (small volumes) we're dealing with while airbrushing models. I use a metal stir stick made by Tamiya. Both of these items are easily cleaned (as is your airbrush) with lacquer thinner you'd buy at Home Depot. I know some people that use Home Depot lacquer thinner (the brand is Klean Strip) to mix their paints and they say there's no problem but I've seen home-improvement-strength lacquer thinner melt plastic, so to me that's crazytown.



I'm ready to mix some paint for airbrushing. I've got paint, leveling thinner, a shot glass, a metal stir stick and some Mr. Retarder with an eyedropper to get it from its bottle to the shot glass.

OK, so I explained paint mixing. And it took too long. Let me sum up:

I mix up some paint and thinner until I think it's good, add a few drops of Mr. Retarder and paint a scrap piece. That's the real test. If it goes onto the test piece well, I continue onto my kit. Plenty of times I'll get 3 or 4 pieces in and decide the paint is a little too thin (because it's pulling back from the edges and I'm having to be really careful not to make puddles) or a little too thick (the paint looks bumpy and goes on kind of dry). I add paint from the bottle to too-thin paint and add thinner to too-thick paint. If it's close I might be able to cheat by turning the pressure up a bit (for thick) or down a bit (for thin). I personally err on the side of too thin, but that's my personal preference.



This Nataku leg is my paint mixing test piece. It has paint from every model I've ever airbrushed. It's better than a flat piece of plastic because it has curves, sides and edges like real pieces. It's better than a plastic spoon because it has panel lines on it and I can shade the panel lines as a test.



I tape a piece of paper towel to the back of my booth to catch overspray. I also use it to make sure paint is coming out of the airbrush and to test how tight the spray pattern is.

OK, so *NOW* you're ready to prime your parts. Congratulations, you just mixed up a bunch of primer and primed your kit. Really, you did. I watched you do it. You pointed the airbrush just to the side of the model, you pressed the trigger to get the air flowing, you pulled the trigger back to get the paint spraying, and then you swept that stream of paint across your model piece, went past it, and brought it back the other way, slightly overlapping each pass as you painted the whole piece. You turned the piece over and repeated with the other side of the piece and you kept everything moving while the paint was flowing so that the paint didn't pool up anywhere and make runs. Then you came back and put on another coat or two until you had a nice, smooth, relatively opaque coat of primer on your model. You did great!



Whether it's painting or priming I take the same approach. I give the piece a once-over from all angles to coat the whole part (left-hand part) then I immediately apply a second coat (part on the right). Even though mobile suits come in funky shapes, they're all three –dimensional so it helps to think of them as 6-sided figures and turn the piece and airbrush so that you hit it from all 6 sides (or 5 if the inside doesn't get painted). This piece was pre-shaded, hence the dark edges and recesses.



Random Tip: Feather dusters... They're not just for Moe Cosplay! With all the sanding, dust and lint will tend to gather on your pieces. I keep it on my lap while I'm priming/painting and dust each piece just before painting it. I also shoot some air out of the airbrush onto the piece to blow away anything I missed with the duster.

After several rounds of putty/prime/sand you'll finally re-prime a piece for the last time and decide that your model's surface is perfect, or at least as good as it's going to get. You're finally going to paint the model!!!

Then you run up against another issue... How do I take these 250 pieces of a model, a model with moving parts, a model that's maybe even transformable, and paint them all? How do I get paint between the inner frame and outer armor? How do I get the paint everywhere so that when I repose the model I don't expose unpainted areas? How do I get an even color all over the model? How do I paint the different parts different colors?

The moving parts nature of our models make them a pain to paint compared to most airplane, ship, car and tank models that have few or no moving parts. Not only do you have to paint all the parts on all sides that might possibly show as the model is re-posed, but you also have to worry about the paint scratching off as the parts rub across each other.

There are different approaches to painting all these pieces, each with pros and cons. The type of model you are building will affect your decision, depending on if you are building HG, MG, NG, RE or RG.

Master Grade and Real Grade kits can be the easiest, even if "easy" is kind of a pain in the ass. Since parts separation is generally fantastic on the newer MG and RG kits OOB, you can literally take each piece apart, put them on skewers, sort them out by color, and go to town priming and painting. It's not hard, there are just 250 to 500 pieces and it's kind of a slog working your way through them all...



There's a built Master Grade hiding in all those parts... These are actually the parts to 4 HG kits, but a complex MG kit FEELS like it has this many parts.

Some people call this the exploded model approach (like an exploded diagram) where each part gets a skewer and gets painted individually. Or maybe you cheat a little and put some assemblies together if they aren't going to move much and will be the same color. This method requires the least thinking but the most time (since you have to skewer each part) and the most paint (since you'll paint a larger percent of each part and waste more paint to overspray). There's also more chance of building up paint on mating surfaces or surfaces that have to slide past each other and making them hard to reassemble or move later.

Another approach is to build the frame of the model (and probably wrap it in parafilm to keep the paint off) and then stick the outer armor pieces on and paint them in-situ. In-situ means "in place". You can use that on your SAT or next job interview, I won't charge you.

This way, you paint the model as major components (2 arms, 2 legs, torso, head, shield, etc). Then when the outer parts are painted, take them off, and paint the frame (either as a whole or in the exploded fashion). The upside of this is you get more even color over large areas of your model, you waste less paint, and it's much easier to paint one leg than to paint the 15 pieces of armor on that leg individually. The down side is that with all the moving parts, you may not get paint in between them so that if a part is bent, it will expose primer or bare plastic.

Just for clarification, internals are the gray mechanical frame underneath the armor, the skeleton of the mobile suit (unless it's a Strike Freedom or a Unicorn or something then it's all gold or red). Externals are the colorful armor bits you see on the outside of the mobile suit.

Another method is to more-or less decide on the pose you want to have your mobile suit in when you're done, put the internals in that pose, and then paint major sub-assemblies of the skeleton like the arms and legs and torso as one big piece.



These are all the parts of an older, simpler, MG kit. Many of the internals were combined into subassemblies before painting, and some of the parts like the head and the gun needed to have seams fixed before painting.

If you re-pose the model, people will see the bare unpainted plastic where you moved the parts, but judges at a model contest aren't allowed to re-pose your model. In fact, if you want to build a model for competition, I'd recommend the fixed-pose approach because moving your model after you paint it just gives you more chances to scratch the paint and make imperfections for the judges to knock you on.

High Grade and No Grade and the new Reborn lineup will require a different approach. Color separation isn't as good and you'll probably have to deal with some (or many) seam lines. Even Master Grade kits (especially the older ones) will have a few seam line and color separation issues. I talked about this up top when discussing snapping the model together and modifying it for color separation. Basically you do the best you can and decide what you want to modify and what you'll have to mask.

If I had nothing but time, I'd sand/file down parts around joints to allow for free movement without scratching paint off, even considering paint buildup. Then I'd paint all the insides of the armor exploded style with my darker shade color and then put them on the frame and paint the outside with the "as a whole" approach. Then I'd take it all apart and paint the frame with the exploded approach. That would give you the best shot at a poseable model when you're done.

In reality I've never come close to doing all that and I use both the exploded and as-a-whole approaches, even on different parts of the same model, depending on the complexity of the model, and how comfortable I am building it to a fixed pose. Every kit is different so you can play it by ear. I probably totally over-explained all that and freaked you out. It's not that hard, I'm just trying to give you a bunch of ideas since there's no one perfect way to do it.

Anyway, let's talk about actual painting. I've already described the whole paint mixing thing. I use Mr. Color lacquer paints. These are the most toxic paints, so I definitely use a respirator (face mask with a built in filter) when painting. The reason I put up with the toxicity is that Mr. Color paints dry and cure in minutes instead of hours or days and they bond very tightly to the primer or plastic you paint them on to making them very resistant to scratching.



Even with a spray booth sucking away fumes, I wear a respirator to keep from sucking the toxic lacquer paint fumes that inevitably linger.

I've also used Tamiya acrylics back in the day on my first 5 or 10 airbrushed models and they work OK. In fact I bet if I used them now that I understand mixing better and shelled out the money for the Tamiya thinner and their retarder (instead of Isopropyl alcohol and nothing) like I do for the Mr. Color they'd work even better. The reason I don't use these least-toxic acrylic paints is that you have to wait a day or two to let them cure after applying them (as opposed to say, 15 minutes for lacquers) and they don't bond to the substrate as well so that they are much more susceptible to scratching and they're more likely to peel off with masking tape when masking.

I haven't airbrushed enamels yet. My understanding is that they take a while to dry (lacquers dry to the touch in a matter of seconds, acrylics in minutes but enamels stay wet longer) and take a very long time to cure (days at least). They do bond better than acrylics, and their slow-drying nature does lend itself to gloss painting and painting in recesses where paint particles will tend to swirl in the air just above the part, dry part way and then stick to the model, creating a rough patch. This is all just my understanding, I have never airbrushed enamels, only hand-painted them with a brush.

There are many approaches to how to airbrush your model, and I use different ones depending on the size and scale of the model, as well as whether it is camouflaged (and whether the camo pattern is hard edged or feathered) and how weathered the model will be.

The simplest thing to do is mix up some paint and airbrush your model a solid color. I almost never do this except on clean models (like cars or flashy mobile suits) or very small/simple models.

Most of my models get some kind of shading, meaning that the paintjob is a mixture of dark and light shades of the same color. Unless there's some color I just can't match in a bottle, I like to use colors straight out of the bottle (or if I have to mix a shade, I'll seriously consider mixing a good amount and keeping the extra in its own bottle). I avoid mixed paints because there's a good chance you'll need to touch something up later and trying to reproduce shading in a touch-up is hard enough without having to try to match a color in the shading that's halfway covered up by another color.

The simplest way to do shading is to use a dark color, mix it kind of thin and spray it with low pressure over panel lines, crevices, joints and other places where shadows might appear.



This model has been pre-shaded with a very dark gray. You don't have to be super-careful, in fact some randomness can be a plus.

Then you just take you main (lighter color) and spray it on all over with a light coat or two so that the model looks that color, but you can still slightly see the shading you did showing through. This method is both simple and effective and a good place to start.



The end product after airbrushing a light coat of gray paint. It's subtle but makes a big difference compared to solid uniform gray.



On the left are a bunch of shaded Zaku pieces with a close-up of a Tallgeese leg on the right.



When I paint my shading, I paint the insides of any parts that might show with the dark shading color. That way nobody sees unpainted plastic on my finished model.

A more advanced version of this shading technique is to use a matching dark shade color, make your shading wider, then take your lighter main color and instead of painting over the whole model, paint panel by panel, working from the inside out so that each panel is lighter in the middle and gets darker towards the edges. This is a more dramatic effect and allows for variation from panel to panel.



These parts were painted with a dark "man salmon" color (OK, it's pink).



After that I come in with Char's "Red" and paint each individual panel from the inside out. Here's the after and before.

One more layer of shading can be achieved by mixing up a very, very thin white or other complimentary light color and replicating paint fading either in the middle of panels, or on upper surfaces that get more sun, or just here and there for more non-uniformity and visual interest. It's also a good technique for black parts. You can't pre-shade black. It's the darkest color there is. So I paint the whole piece solidly black, then paint inside the panels with a very dark gray for shading.



You can't pre-shade black so you have to reverse-shade it with a lighter color.
Camouflage can complicate shading since the first color you are masking over will have overspray where you will paint the second color, and that overspray will cover over the shading work you did, reducing its contrast and effect on the second color. With a hard-edged camouflage it's not too hard because you can re-shade the part after masking.

Soft-edged camouflage is more difficult because your re-shading efforts can get further under that soft edge than the main color so when you remove the masking you have some dark bits along the boundary between the two colors. My suggestion is to try to reduce the first color's overspray into areas where you will paint the second color so that you don't wipe out your shading there and then to carefully re-shade the second color areas after masking, intentionally falling short of the edges.



Note the dark brown edges where the tan meets green. This was an unwanted side-effect of trying to pre-shade on a soft-edged camouflage scheme.

On way to work around the shading problem with soft-edged camouflage is to not even shade it, but instead apply the camouflage in solid colors and then once it's all painted, come in with your very very thin white (or tan or gray) and provide a faded paint effect, hitting panels and top-facing surfaces and ignoring boundaries between colors. This also has the effect of slightly blending all you camouflage colors, which makes the model look more realistic, and less toy-like. Military modelers will often spray a mist coat of the base color or use washes and filters to slightly blend together their camouflage for realism. You can look that up, that's beyond this lesson.



The subtle shading that worked on the first coat of light gray has pretty much disappeared after the second coat of darker gray camouflage. Shading can only show through so many layers of paint.



Here's the before. The darker gray has no shading.



Here's the after. I mixed a very thin white and sprayed the middle of the dark gray panels to restore a shaded appearance. It's subtle. Subtlety is a big part of weathering, the process of making a model look like a used machine.



I used the same technique over both the green and the tan on this Spitfire (OMG it's not a Gundam!!!).

With a round of airbrush painting (or priming) done, you have to clean your airbrush. I use Klean Strip lacquer thinner that I get at Home Depot to do it. On a day-to-day basis I simply fill the cup with thinner, spray some through the airbrush into my airbrush cleaning receptacle and then dip a paper towel into the remaining thinner in the cup and wipe any stuck-on paint from the inside and outside of the cup and the cap with it.

I'll refill the cup with a bit of thinner and then cover the end of the nozzle of the airbrush. When you pull the trigger on the airbrush, it forces air backwards through the nozzle into the cup, blowing back paint and anything else that may have gotten in there. If you see anything solid, dump it into the cleaning receptacle. Otherwise blow the (now cloudy) thinner out the airbrush. Repeat this process 3-4 times with a bit of thinner until the backwash comes out clear or pretty close to it. By the way, I have a gravity-feed airbrush with a cup permanently attached to the top of it. Your airbrush may be totally different and require a different cleaning method.



This cleaning station lives in my spray booth. It's a handy stand but it's mainly there to catch all the paint thinner you'll shoot through your airbrush as you clean it.

Sometimes your airbrush will get really dirty or clogged or you've finished a whole model and you realize you need to really clean it "for real". I disassemble it, put the little bits in a shot glass with lacquer thinner and put that in my jewelry cleaner (surrounded by water) and run it. They come out with a nice shine. I go at the big parts with more thinner, paper towels, Q-Tips and little brushes they make specifically for cleaning airbrushes. Again, exactly what you do varies from airbrush to airbrush.



After building an entire HGUC Zaku my airbrush needle was this dirty.



Paint thinner and a paper towel take care of the needle.



Again, my ultrasonic jewelry cleaner makes easy work of a cleaning task. All the small bits go into a shot glass with lacquer thinner and into the cleaner for 3 minutes.



My airbrush parts were this dirty...



These little brushes reach into the small places on the body of the airbrush that the needle travels through. The lube on the left is used after you clean the airbrush on the moving parts to keep everything moving smoothly.

In between airbrushing different colors of paint, you'll probably have to do some masking... I primarily mask with Tamiya masking tape. I have a thick roll (like 16 or 18 mm wide) and a thin one (it's 4mm, I think). I would never use Home Depot tan painter's masking tape, it's way too strong and will take the paint with it when you pull it off your model. I will use the blue low-tack masking tape to help cover the area behind the masking tape but I'll often stick it to something like a rag (or my shirt) first then pull it off to remove some of its stickiness and I try to stick it to the Tamiya tape and then lightly tack it down in a few places to the model itself, just enough so that it doesn't blow off. I'll also use paper and Parafilm (a stretchy, clingy wax paper used in laboratories and available from MicroMark and some other hobby distributors) to cover off larger areas I don't want to paint.



For this camouflage pattern I painted tan first and then cut out the camo pattern on Tamiya masking tape.



I used a like-sized photocopy of the instructions as a guide.



Then I painted the green.



And here's how it comes out.

Small hard-to-reach or oddly-shaped areas can be masked with sticky-tack. Masking is one of those pain-in-the-butt meticulous parts of model building. Some pieces of the model need like 6 little pieces of masking tape and a few little blobs of sticky tack to make the shape you want wrap around some multi-faceted contour of your model. But... if you don't do good masking, your model isn't going to look so great.



Look carefully and you can see how many little pieces of tape it takes to mask these areas off on this Zaku. The little orange blobs are sticky tack that I used for a small nook that was too small for tape.

Small scissors help when masking. You also want some toothpicks, a good new X-acto knife blade, a metal-edged ruler and something to cut on (like a hobby cutting mat, the green background in most of my pictures). It can be handy to cut thin stripes of masking tape so that you can work it into and around the shape you want (you can curve a thin strip of masking tape slightly, but you can't curve a thick one) and then fill in the shape with larger pieces of Tamiya tape and then blue tape or Parafilm.

Toothpicks are good for burnishing (rubbing down) the edges of the masking tape onto your model to make sure you have a good seal. You can also put a piece of masking tape over a lumpy area, push it into the cracks with a toothpick, and then carefully cut along those cracks with your sharp X-Acto knife blade. This can help you mask around raised or recessed surface details.



Meet The Elephant Man and The Invisible Man ... Masking the faces and hands of these figures with tape would have been impossible.



Here's an example of all my masking implements in one... I started with Parafilm to wrap the rest of the parts and covered a couple other areas with blue masking tape. Then I came in with Tamiya tape to get pretty close to the items to be masked and then used sticky-tack fir the super-fine little details.

After you are done cleaning your airbrush, slowly and carefully peel back your masking tape. It might help to run a brand-new X-Acto blade down the edge of the tape to separate the paint on the model from the paint on the tape. It also helps (when possible) to remove the tape after the paint has dried to the touch but before it is fully cured. You may have some clean-up/touch-up to do but that's life.

You're gonna hear me say "Use a brand new X-acto blade" several times. Buy the 100 packs of X-acto blades and buy them from Michaels or Hobby Lobby with their 40-50% off coupons. Both those stores have apps and they have those coupons almost every week on the app. When you have a box of 100 blades, you don't worry so much about tossing one and getting a new one. I put the old ones in a plastic water bottle and when it fills up (in about 10 years) I'll wrap it in a bunch of duct tape (to make sure no trash sorters get killed) and throw it away.



Another worthwhile investment. Psychologically (if you're cheap like me) it's easier to toss a dullish blade when you've got another 99 in a box. Look how beat up this box is. Even at the rate I toss blades, this box lasts for years.



Here's my "sharps" container where I put used X-Acto blades and razor blades.

Some models will have details that are either too small or otherwise impractical to mask off and airbrush. I hand paint these details with a small brush and Vallejo acrylic paints. I used Testors enamels for this for a lot of years but I get good results from Vallejo and the water based water clean-up paint is super simple to use. Don't try to hand-paint with Lacquer paints or Tamiya acrylics. They dry too quickly and leave ugly brush strokes.



I hand-painted the cockpit details inside my Spitfire with Testors paint thinned with Ronsonol lighter fluid.



Vallejo Acrylics. This paint is my new favorite for brush painting.



It was just easier to hand-paint the inside of the Zaku's head gray than to mask it off.



I mixed a reasonably close shade of gray from gray and black. There's a little pool of water on the top of this mixing tin that I mix in as the paint in the tin dries up to keep it the right consistency.



The Vallejo can go on pretty thick...



But it will conform to the part as it dries.

Shake up the little bottle of Vallejo paint, squeeze a few drops out into your little mixing bowl and then use your finger to sprinkle a bit if water in the bowl. Use your brush to mix some of the water into the paint until you have a good consistency. The key to hand-painting is paint consistency (something like melted ice cream is good) and getting the right amount of paint on the brush. Get the right amount and consistency on the brush and let the paint do the work for you.

Too thick paint or too much paint on the brush will make a big ball of paint that's hard to accurately paint onto the model. Put too little paint on the brush and it won't flow from the brush to the model and you'll get a thin streaky coat of paint as your bristle scratch the surface of the model. Too thin paint will run all over the place on you.

Even though Vallejo is acrylic, it's pretty tough paint and I've put lacquer clear coats on top of my hand-painted details many times with no problems.



I hand-painted everything in this picture except the green background and a few black parts.

So now you've finished painting and your model is really starting to look like something. But that something probably still looks pretty toy-like because while it looks much better than what came out of the box and all the seams are filled, it's still multicolored plastic.

After painting, there are two things you can do to really add visual interest to and or bring out the details of your model. Add decals and do a wash. Both require applying a coat of clear gloss paint to your model.



One little time-saving step you can do after painting is to take the parts that you had kept separate because they had to be painted different colors and make them into subassemblies. These 7 subassemblies are much easier to gloss coat as 7 subassemblies than as the 20 skewers full of different-colored parts that make them up.

Lots of companies make clear coats that you can put on your model, just about all of the companies that make model paints do. You can buy little jars of clear gloss paint and mix them like any other paint but since you're going to clear coat a LOT, I'd try to buy in bulk, and preferably get something that is pre-mixed to the right consistency for airbrushing. Testors makes "GlossCote" and "DullCote" in both large pre-mixed bottles and rattle cans (spray paint). Alclad has a line of "Klear" clear coats in large bottles that are ready to spray.



Lots of companies make clear coat products.

Many model builders love this stuff called "Future", except it's not called "Future" any more. For a while (after being bought out by Pledge or their overlords) it was known as "Pledge Floor Finish with Future Shine" which is totally confusing, but less so since the word "Future" is still there. Now it's simply called "Pledge Floor Car (Multi Surface FINISH)". It's an acrylic floor polish that readily sprays through an airbrush. It's cheap and very plentiful (Walmart carries it) and also has uses for clear pieces. It's good stuff and I've used it for clear coats, but I've gone "all lacquer" so I don't use it for that any more.



My old bottle of Future on the left. It's called something different now...

Another "bulk" source of clear coats is "rattle can" spray paint bottles. You just have to decant them. I decant spray cans of Mr. Color UV Cut Super Gloss spray cans for my clear coating needs.

Get a clean good-sized jar (I clean use old jars of Mr. Surfacer with Lacquer thinner and use them). Cover the top with aluminum foil and poke a hole big enough to fit a straw through. Make sure you leave an uncovered place on the side of the jar so you can see inside the bottle to see how full it's getting.

Get a plastic straw and cut it to about 5 inches long or so. Put one end of the straw over where the paint sprays out of the spray can and tape it in pace with masking tape. It doesn't have to be airtight, just secure.

Now put the other end of the straw into the hole in the foil on the top of the jar and spray. What comes out will be really cold. Possibly dangerously cold, so hold the top of the jar, not the bottom (or wear oven mits or something).



Take your can of gloss spray and tape on a straw.



Take an old bottle (I use Mr. Surfacer bottles) and cover it in foil and poke a hole.



Is it just me or is there something subtly dirty about this picture? Anyway I took this picture inside but since I'm going to spray out ¼ of this bottle of spray paint, I go out in the garage or decant in my spray booth. There will be lots of fumes.



Decanting isn't that hard, and it's only a **little** dangerous.

What comes out will also be FULL of the propellant chemical that causes the liquid in the rattle can to come shooting out when you press the button and open the valve. So DO NOT shake or stir your jar of freshly-decanted clear coat. Also, DO NOT put the cap on it (especially if it's a Mr. Surfacer bottle with the inner plastic gasket that will tend to seal it even when only a little bit tight). The former will make your jar of clear coat into a volcano that will clear coat your ceiling, your face, etc. and the latter will make your jar of clear coat into a glass grenade.

Just let it sit overnight. If you're worried about dust getting in, put a piece of paper over it, or something, but nothing airtight. I put mine in my spraybooth just to be safe. Better to have a paint volcano go off in my spray booth and blast that ceiling than the ceiling of my house.

The next morning I have a Mr. Surfacer jar-sized bottle of clear coat that's ready to spray. Since I like to spray at low pressure I add some leveling thinner, but just a little, like 10%-20%. I'll also add about 15 drops of Mr. Retarder.

The spray can of gloss coat you buy may be expensive (around \$15), but you'll get to fill up that Mr. Surfacer jar about 4 times from it and so it's probably cheaper than buying the equivalent 5-6 jars of clear gloss in the standard size little bottles (if you can ever find that many) and mixing it with a boatload of thinner. It's also definitely easier.

Put that clear coat in your airbrush and apply the gloss coat until it's good and glossy. It may take several coats. Most people suggest misting many coats on. I don't know if I'm impatient or the weather here is too dry or what but for me I shoot at a highish (for me) pressure and lay down a pretty thick wet coat. You take the risk of runny paint but sometimes it seems like I can't get a good gloss coat unless I get the paint on wet so that it dries across the surface all at once like the surface of a mirror instead of in patches. I think the Mr. Retarder helps with this in that it keeps the paint wet until you get it all on and then it smooths out and dries with a uniform sheen.



Two pictures to compare flat painted pieces (left side of pictures) versus gloss-coated pieces (right side of pictures). Pictures are with and without flash.



Here's why I spray gloss in one wet coat instead of many mist coats. This part was already nice and glossy but after I sprayed just this decal with gloss, the overspray around the glossy patch dried kinda flat. Notice how you can easily count the three lights of my ceiling fan reflected in the glossy area on the left and on the right the light is diffused in the semigloss overspray area.



This picture and the one below it may look identical at first, but look at the parts on the bottom left. Notice how the light reflected off the parts is hazy. This is a picture after one good gloss coat.



This picture was taken after the second gloss coat. Notice how much sharper the reflections are. You want a glassy surface for the upcoming decal work.



Whether it's gloss coat, primer, or paint, if you put too much on and make a puddle, you have a decent chance of saving the situation by sticking the piece sideways into your foam block with the puddle facing up. If you're lucky, the even pull of gravity will allow the paint to self-level and essentially the puddle disappears. If you just stick the skewer in normally, the puddle will all be pulled down to one side and dry as a thick drip.

So with a good gloss coat applied, it's time to add decals. The art of applying decals is to get them to melt onto your model in a way that they look painted on and you can't tell they're a decal. To do that, you need waterslide decals. Take any peel-and-stick stickers that came with your Gundam model kit and throw them away. Or put them on your G.I. Joe, or Transformer, or Teenage Mutant Ninja Turtle or some other toy that Michael Bay ruined. Stickers don't conform well to complex surface contours (the ends peel off and stick out) and they're so thick that it's impossible to make them disappear into the model.



The "EFSF" decal is an ALPS-printed water-slide decal. The "Meteor" sticker is a Bandai water-slide decal. The "01" is a peel-and-stick sticker from an HGUC kit. Note how the panel lines go through the water-slide decals but not the sticker (it sits on top of the recessed details). Also note how the edge of the sticker near the top of the one is peeling off. Stickers do not conform to rounded shapes and peel off of edges. THROW THE STICKERS AWAY!!!

Bandai makes waterslide decals for many of their Gundam kits and even includes them in a few of them. Bandai's decals are on the thick side (still better than stickers), but their carrier film (the clear film that hold the decal ink together) is pre-trimmed just outside of the design of the decal so that you don't have to exactly cut out the shape of the decal. You can see the carrier film of the decals if you hold them up to the light. Generally, decal carrier film is way glossier than the paper around it.



Bandai makes waterslide decals, which is good, because stickers suck.



Most big-name companies make decals with pre-trimmed carrier film (this shiny parts). This saves you a lot of work.

Samuel Decal (Samueldecal.com or Samueldecal on facebook) makes ALPS-printed decals of his own design (and sometimes copies of other designs) for Gundam kits. ALPS decals are really nice and thin. There may be some imperfections from the printing process, and since they are thin they can more easily tear and fall apart. The carrier film is sprayed onto the decal sheet as a solid coat so it you cut a big square around a little printed decal design, you'll get a little decal design in the middle of a big square of clear decal film.



Here's a bunch of decals I designed and got printed at SamuelDecal. He also sells decals of his own designs.



Decal sheets from smaller companies often have one continuous layer of carrier film and it's on you to trim carefully around the part.

It's a trade-off between the two kinds of decals. I get better end results with Samuel's decals, but I have to very carefully cut out each decal individually in a very tight pattern. Bandai's decals are so thick it's hard to make them really disappear onto the model because they make a little bump on the model, but they're easy to apply since they're sturdy and the carrier film is pre-cut.



On the left is a decal printed by SamuelDecal with non-stop carrier film. I had to cut it out carefully around the decal design. On the right is a Bandai decal with pre-cut carrier film. I didn't have to trim it carefully. Cutting around SamuelDecal's decals takes more time But SamuelDecal has a wider variety of decals than Bandai does, and his decals are THIN so the final product usually comes out better than Bandai's decals.

There are a couple other small companies I see making decals for Gunpla from time to time, and you could use decals intended for aircraft or tanks or whatever. As long as they are water slide decals the same basic methods apply.

People tell you to use warm water for decals and it probably helps somehow (Makes them more supple? Helps get the glue on them to hold to your model?), but applying decals takes HOURS and what are you going to do, get up and rewarm your water every 5 minutes? Then again I live in Southern California. Maybe if you live in Minneapolis in the winter you need that warm water.

So, cut out your decal. Cut it close to the design if it's a SamuelDecal decal, and not so much if it's Bandai or some other big-company-produced decal with pre-cut film. Dip it in water for 10-ish seconds, long enough for the decal paper to soak all the way through. The paper may curl up, that's OK. If it's a small decal, hold onto it, use tweezers if you need to (but grab the edge where it's just the film, and don't crush the hell out of it). If you let go of it, good luck fishing it out before the decal comes off of the paper, and then really good luck getting the loose decal out of the water without destroying it. It can be done, but...



Ready to do decals! A little tub of water (Gerber Stage 2 baby food containers are great for this, and for storing small parts), small scissors, tweezers, toothpicks, a couple paper towels and some Mr. Mark Softer.

Take the decal (hopefully still on its paper backing) out of the water. Set it on a damp paper towel. The decals and the paper will stick to dry paper towels, so keep it damp. Maybe sprinkle a little water on top of the decal paper to keep the decal nice and moist. Give it another 20-30 seconds.



After the decal is good and moist, take it out of the water and put it on a wet paper towel for 30 seconds or so.

Now get your fingertips wet. Are you seeing a pattern? Nothing that touches your decal should ever be dry. Decals will stick to anything dry and may be lost or damaged before you even realize it came off the paper. Sneaky buggers...



I didn't stage this. My dry thumb swept across a wet decal while I was picking up another decal and grabbed it right off the decal paper. Lots of water is your friend when trying to fix a decal "oops". That and a very gently touch with toothpicks or tweezers and some patience should save the day.

Grab the edges of the decal paper with your wet fingertips and use another wet fingertip to gently test the decal to see if it will slide around the decal paper. If so, you're ready to go. If not, set it back down, sprinkle some more water and give it another 30 seconds. After that if it still doesn't move, what you can do is (with wet fingers) use your thumb and press down on the decal so you're squeezing it to the decal paper and firmly, while covering as much of the decal as possible (so it moves as one piece and does not tear) slide the decal to the side. Some decals seem to need a little nudge to get sliding, but only do this after they've had plenty of time to move on their own.



Once the decal is ready to slide off its backing paper, get the piece ready for it by sprinkling some water where you plan to put the decal.

Now that your decal is sliding, sprinkle some water onto the model where it's going to go. Hold the decal paper by the edges and place one side of the decal paper up against the model, and laying against it at about 30 degrees so that it's close to flat against the model. Place your finger on the edge of the decal that is closest to the model and slide the edge onto the model. Then, holding that edge onto the model, slide the paper out from under the decal.



Tweezers are handy for handling small decals. Just don't squeeze so hard that you puncture the decal.



Slide the decal onto the model from one end. Make sure your fingers and the model part are wet.

With little tiny warning decals it can be hard to hold the paper against the model and slide it on so here's what I do (which is contrary to most advice I see on decaling but works for me), I wet my finger and slide my finger over the decal, swiping it off the decal and onto my finger so that the top of the decal is touching my finger and the bottom side that was up against the paper is facing out. I then dab my finger on the wet spot on the model and it lets go of your finger and sticks to the model. As long as I made sure everything was wet, this has never caused me problems.







"Whatever you do, don't touch a decal with your finger!" said the guy I completely ignored... If the decal is too small to slide onto the model, swipe it onto your finger (note that it's upside down) and then blot it from your finger to the model.



For some reason (the ridges of your fingerprints or oils on your skin?) the decal comes right off your fingertip and stays on the model.

Now you've got your decal onto the model, but unless you're really lucky, there's no way it's going to be in the perfect position. You'll probably need to nudge it a bit and straighten it out. My favorite tool for this is a toothpick, but no matter what you use, you have to have the right level of moisture under the decal.



Toothpicks are great for moving decals around.



They can also be used to hold the decal in place while you slide the paper out from under it. Sometimes your fingers are just too big for this kind of work and they keep you from seeing what you're doing.



This is way too much water, you'll never get the decal to stay still, it'll just float all over.



Sneak in from the side and soak away the excess with a paper towel.



When a decal is in position I blot away excess water with a damp paper towel. Don't use a dry one, it'll pull off the decal. And don't wipe off the water, you'll move the decal. Just blot it straight on and straight off the model.

If there's too much water, the decal will slide all over the place and you'll never get it to stay where you want it to. If the decal is floating in a puddle of water, I dab the puddle of water the decal is floating in with a slightly damp paper towel (again, never touch a decal with something that is completely dry) I dab the water from the edge of the puddle so I don't snag the decal. Since the paper towel isn't bone dry, it will leave the surface slightly moist. You need some water there for the decal to slide over. Slide the decal into place and as long as it's dry enough not to go floating off by itself, just leave it. Put your next decal on. Then come back to this one and brush on a little Mr. Mark Softer.

Mr. Mark Softer will literally make the decal soft. Very soft. It will allow them to bend over sharp angles and stretch smoothly over complex curves.



This stuff helps decals conform to curved surfaces, settle into crevices, not silver, and generally look more like paint.

Mr. Mark Softer is some seriously powerful stuff so I wouldn't go using it over acrylic paints and Future clear coats (I've heard some people say they've done it with no problems and I've heard some horror stories of ruined finishes). Micro Mark makes a solution called MicroSol which is less powerful which I have used with Future.



Another brand of less-powerful decal solution that is safer on acrylic clear coats.

There's also a wet/dry "sweet spot" for when to apply Mr. Mark Softer. If the decal is still too wet, lots of Mr. Mark Softer will flow right under it, lift it and move it out of its perfect alignment. What's worse, it has now made the decal really soft, so efforts to put the decal back in place can warp or tear the decal.

On the other hand, if the decal is too dry, and all the edges are sealed to the model, no Mr. Mark Softer gets under the decal and so you aren't getting the full benefit of the Mr. Mark Softer. Aside from helping the decal wrap around surfaces, these products also help prevent "decal silvering" where tiny, tiny pockets of air get trapped underneath the decal. These tiny air pockets become reflective and will make parts of the decal shine (like silver) even after flat coating them. The flat coat does no good because the shininess is trapped underneath the decal.



When the decal is in position, brush on some Mr. Mark Softer.


I got greedy and tried to nudge this model after applying Mr. Mark Softer. Even though it started out as a pretty thick Bandai decal, after the Mr. Mark Softer it about folded over on itself with the slightest touch.



I pretty much saved it with some careful toothpick maneuvering but only pretty much. When the decals are that soft and they get bent it's hard to get the mall the way straight again.

Often, especially with bigger decals, you will see it wrinkle and shrivel after you put on the Mr. Mark Softer. Don't freak out and try to fix the decal. This is a strange but totally natural process, like puberty. The wrinkles will settle and disappear as the decal dries out.



Don't freak out if this happens to your decal after you put Mr. Mark Softer on it. Wrinkled decals flatten back out as they dry.



20 minutes later it's good to go. Try getting a sticker to conform to a round surface like this...

After you've applied all your decals and they've dried, you can inspect the parts and see how they came out. Some will need more work. No matter how good your gloss coat is and how careful you are, you'll inevitably get some decal silvering. You'll see it when you hold the model up to the light and you can see the tiny shiny parts inside the decal.



All that cloudiness around the spokes of the Zeon logo is decal silvering... it's a pain. The better you gloss coat the less of this you'll have but inevitably you'll have some. Fortunately you can fix it.

Silvering is a pain but not irreparable. Just poke the silver spot with a very sharp needle or the tip of a brand new X-Acto blade (poke it a few times in fact) and brush on a bit of Mr. Mark Softer. It will get through the holes you poked, replace the air, soften the decal, and suck it down to the surface tight as it dries, eliminating the silvering.



Put a needle in your pin vise and take revenge on that silvering. Lightly poke several holes around the silvering and then brush some Mr. Mark Softer over the decal so it soaks into the holes.

This might take a couple tries, and it might help to get a Q-Tip damp with some Mr. Mark Softer and even push the decal down some to help squeeze out the air (don't smash it, just pat it).

You'll do a similar process where decals go over panel lines or a really sharp concave bend in the model. Decals tend to stretch tight over gaps and crevices, but since they are supposed to represent something painted on, they should not span across gaps or sit on top of recesses. When this happens, score the decal CAREFULLY along the recessed area with a brand new X-Acto blade. Go slow and use light pressure so you slice the decal neatly and do not tear it. For rivets you can poke the decal with a sharp needle. Once you've poked and sliced the decal, brush on a bit of Mr. Mark Softer to get it to lay down into the recess.



These decals are sitting on top of the panel lines, and the tail of the right-hand R is stretched across the gap between the fin and rudder. It's not very realistic and the panel line wash you're going to do later won't work with the decals covering over the panel lines.



I used a new X-acto blade to slice the decals on the straight lines and a pin to poke the holes for the rivets. After applying more Mr. Mark Softer the decals settle into the recesses. Later when I do the panel line wash, the wash goes right through the decals adding to the illusion that the markings are painted onto the model.



These decals stretch across thick panel lines and other recessed details.



After slicing them as carefully as I could, I applied more Mr. Mark Softer to get them to sink down into the details. It tears up the decals in places (look at the S in EFSF) but you're going to apply a wash later that will cover the cuts and tears.



All better after the wash.



If this weren't a demo piece, I would have cut the excess decal carrier film out from under the loop in the P. I didn't and all that excess film wrinkled up as it tried to go over those pretty radical bends.



There's also a pocket of air trapped between the decal and the part in this recessed detail.



I sliced them carefully with my X-Acto knife and blotted them down with a Q-Tip soaked in Mr. Mark Softer.



There's a tiny trace of the wrinkle left, but it will disappear once you flat coat the piece. Obviously I should have been more careful cutting out the decal and if you are going to paint the model glossy you have to be really careful since gloss finishes reveal all kinds of flaws that flat finishes hide.

Now that your decals are applied, sucked down into recesses and free of silvering and all dry, it's time to protect them with another gloss clear coat. Once that clear coat has cured, you can move onto the panel line wash.

The point of a panel line wash is to get dark paint or some other colored substance into panel lines, rivets, and other recessed details of the model and then wipe the excess off the surface of the model. This simulates natural shadows that appear where two surface panels meet on a real machine or there are other recesses or small holes (like grills).

There are a bunch of ways to do this. Some people use very fine point technical ink pens such as those made by Rapidograph. I personally don't like them because they clog. And also they clog. And about every 20 minutes... they clog. Some people love them but I felt like I was spending more time unclogging them then putting panel lines on my models.



Some people swear by these pens for panel lines. I'm not a fan, personally.

You can also use Gundam markers to draw on panel lines. Aside from clogging, I'm not a huge fan of pens because as small as the tip may be you can't get it into small places as well as you can get the bristles of a brush. Also, the ink doesn't flow out of a pen by capillary action onto the model (and into the recesses of the model) like a liquid wash does off a brush.



Somebody gave me one of these (I wouldn't be caught dead with one otherwise, haha). I've used it a couple times for panel line touch-ups, but it's not going to replace washes as my main method of enhancing panel lines. The pencil is a useful cheat for panel line touch-ups.

More and more companies (like Mig and Tamiya) are making pre-mixed liquid washes. I've just started trying those out, and there's not a big difference between that and my home made wash. You can make you own wash by thinning the heck out of some paint like probably 80-90% thinner to 10-20% paint. Keep in mind the rules about putting one kind of paint on top of another. You can put acrylic washes and enamel washes on top of lacquers. You can put enamel washes on top of well-cured acrylics (including Future). Don't bother making a lacquer wash... The thinner dries way too fast and it's too expensive. The pre-mixed washes usually say on the bottle what kind of wash they are (and if not you can look up online).



I used this MIG wash on my Zaku. It was my first time trying it. I wiped off the excess with Ronsonol-soaked paper towels.

For a homemade wash you can use the Testors enamel paints and thin them with either odorless mineral spirits or Ronsonol lighter fluid (I use lighter fluid). I pretty much use two colors, Rubber (one of the simple cheap ones in the square bottles) and Dark Gull Gray Model Master paint (Model Master is the Testors paint in the bigger round bottle). I use the gray for white things and the rubber for almost everything else. I like Rubber because its dark reddish brown does a good job of looking like dirt, oil, rust and shadows all mixed together. Rubber also looks good over most colors. You'd be surprised how different the same color can look on top of say, yellow and then on top of gray.



When I make my own washes these are my go-to colors.

I used to mix paints to try to get the perfect color for my washes but found two problems. First, if I needed to go back and touch something up, I'd have to try to perfectly mix the same color to match it. Second, some mixtures would go on great and then change color (going from a gray or brown to a very stark near- black) under the next clear coat as the pigments in the paint separated or had some chemical reaction or something.



I mixed a gray that wasn't too dark for the white parts of my ANA Gundam. After gloss coating it, it turned near-black. One of the reasons I no longer mix colors for washes but use colors straight out of the bottle.

To mix up a wash, take your paint, mix it with a stir stick and put a few drops from the stir stick into a small mixing dish. Then pour some thinner in there. For thinner I've used Ronsonol lighter fluid and odorless mineral spirits. Ronsonol seems to work better but it's more toxic and if you go crazy with it the lighter fluid can react with bare plastic (like on the back side of the pieces that maybe you didn't paint well) and make it brittle. I've had a few parts spontaneously crack on me and Ronsonol was the culprit (one of the reasons I'm experimenting with pre-mixed washes).

Mix in enough thinner so that the wash is very thin and watery but not so much that you can see the pigment break apart into a fine powder swirling around in the wash (if that happens, add another drop or two of paint).

Now that it's mixed, load up a fine brush with the mix and dab it onto a panel line. Ideally you have a perfectly glossy clear coat and your wash is very thin and capillary action sucks the wash right out of the brush and the wash runs down the panel line all by itself. Sometimes things aren't so perfect and you kind of have to paint it into the panel line. That's OK, in fact if you want a dirty-looking model you probably want to slop the wash around.



You can see the dab marks where I touched the brush in a few places and let the wash fill the panel lines with capillary action.

Now let the wash sit for a while. I tend to apply my wash to one part of the model and then apply it to another section or two and then come back to the first one to take off the excess. If you don't let the wash dry some, it will come back out of the panel line in places when you try to remove just the excess, and you'll have to do touch ups. If you wait too long, the excess will be cured and much harder to remove without some "scrubbing", which will also tend to scrub away the paint from inside the panel line.

With enamel paint washes I think anywhere from about half an hour to a few hours is OK. I think I've even let a wash sit on overnight without any problems. Once some time has passed, put some thinner on a small piece of paper towel to wipe off the excess. I rip a piece of paper towel about two inches by two inches and then fold it in quarters. You want it damp but not soaking. Now wipe the surface of the model with the folded piece of paper towel. Your goal is to wipe the excess off the surface without getting the paper towel and thinner down into the tight places where you want the wash to remain. Wipe gently and don't "scrub" the model unless you have a spot that won't come out.

When you have a tight recess, use the folded edge or corner of the piece of paper towel to get in there. Some recesses aren't so sharp so there's an art to taking some of the wash off so it's not a dark smudge without taking all of it off.



Used pieces of paper towel after removing excess wash.

I go through pieces of paper towel pretty quickly, especially on a clean-looking model. The excess paint that builds up on the paper towel can start to re-apply itself to the model as dirty smudges. For a dirty-looking model, you can use this to your advantage by drawing the paper towel in the direction of gravity or airflow to create a dirty, rain-streaked appearance to the model.



This is how it looks after the excess was wiped off. This model was meant to represent a clean, well-maintained machine so I took ALL the excess wash off.



The Core Fighter was made very dirty so I really slopped on the wash.



The sloppy panel line wash didn't just fill in panel lines, it turned a clean little model into a dirty bird.



You can see the streakiness of the leftover wash in this close-up and on the picture of the rudder a few pages up.



Here's the MIG wash applied.



And then wiped off.

Once your panel line wash is done, you're on the home stretch. There are many other weathering techniques you can use and some go before and some go after the panel line wash and some go on top of gloss clear coats and some go on top of flat clear coats. But since this is a "basic guide" I'm not going much more into more weathering techniques. Weathering can be the most complicated (and fun and rewarding) part of model building, it's a real art form, there are tons of techniques and products out there, and in competitive model building it can be the difference between first place winner and "nice model".

But for now, for your first few models, it's safe to cover over that panel line wash with a flat (non-glossy) clear coat. Flat coats are easy because they don't have to be particularly heavy like gloss coats. Once that has dried/cured, if you're building a clean model, you can put the pieces together and bask in the glory of your first real finished model. I geeked the hell out when I finished my first real airbrushed model. I was like, "Wow, <u>I</u> did that!"



Clear flat coats are cloudy. Don't freak out! It will make your model a little lighter than when it's glossy but the gloss made it a little darker so it's pretty much back to normal.



Glossy part on the right after the wash. Flat coated part on the left.



Metallic parts like this axe blade and clear parts should remain masked off during the flat coat. You want them to stay glossy.



By the way, my metallic paint of choice is Alclad. It's pre-mixed (ready to spray) and really makes parts look like they are made of metal. Many of my models have Alclad-painted frames and thrusters.

For a dirtier model I suggest two more simple but effective weathering techniques. The first is dry brushing, and looks good models with lots of raised details, especially in areas that are dark-colored where the wash doesn't show very well. Get either some enamel paint (like Testors) or preferably artists oil paint in a light tan-gray color (don't use white, it's too stark). Put just a little paint onto a flat soft brush. Now brush the brush repeatedly onto a paper towel until it seems like there just can't be any more paint left on it. Now brush that brush over your model. There's still a tiny bit of paint on the model, and it will "catch" on the raised surfaces and highlight them. The mixture of panel line wash shadows and dry brush highlights can really make a model pop.



Core Fighter ejection seat before a wash and dry brushing.



The same seat after a wash and dry brushing.

If you overdo it, wipe the paint off the model with a paper towel (use a little bit of thinner if needed) and if you underdo it just repeat the process. You can also dry brush mechanical parts and armor with a bit of silver or steel to make it look worn.

You may want to seal your dry brushing with another flat clear coat but it's kind of optional. You can rub some of it off by handling the model too much (but then you can touch it up so... up to you).

The other simple weathering technique is paint chipping. You can literally stipple bits of silver or steel or rust colored paint onto the model with a tiny brush. I do that sometimes for heavy weathering. But my preferred method is colored pencil. You can go to an arts and crafts store and get a dark umber pencil (a good approximation of worn steel for tanks, look at the paint chips on a construction vehicle or tractor near your) and a silver pencil (for shiny metal like aluminum, magnesium and titanium that airplanes tend to be made of).



Colored pencils are good for easy paint chips.



I used the dark umber pencil to make these paint chips on my light gray GMs.

Since Gundam models are fictional, you can do shiny silver paint chips or dark steely paint chips. It's up to you but I generally don't use both on the same model since in my mind they represent different kinds of metal.



Meanwhile on this model I used silver pencil. Why? Because the brownish umber would have barely shown on this earthtone-camouflaged Dom.

Anyway, get your pencil and draw on some paint chips. I don't have to tell you how to use a pencil, do I? As with all weathering, a little bit goes a long way. You want it to be there, it gives your model a certain feel, but it's not the star of the show (at least not at first glance).

And that's it. Like I said for the clean models, let it dry and put it together. Small or loose pieces can be attached with a bit of super glue or "Zap" (both are Cyanoacrylate glues, I like medium Zap). It dries shiny so touch up with a bit of flat clear coat.

With the model done, you probably want some pictures for posterity. I have a super simple photography setup that you can see below. The black paper is from Michaels, the two lamps were bought on clearance from a grocery store and I got the mini tripod that my camera is sitting on at Best Buy. The whole setup (minus the camera) cost about \$25 (you can buy a photobooth with better lighting and diffusers but it will cost a LOT more). Even if all you have is a cell phone this setup will give you a pretty decent picture of your model.

I'm not going to go way into the camera end of it because I'm no pro photographer but I use a small aperture (high f) for depth of focus (so the whole model can be in focus, not just the front, middle or back) which requires the intense lighting (that table is also set up directly below my ceiling fan lights) so the ISO gets a bit up there and the shutter speed gets slow. That's why I need the tripod, to keep the camera from shaking while the shutter is open. I also use a 2-second timer so I push the button and two seconds later the camera goes off so that pressing the button doesn't shake the camera while the shutter is open.

The mixture of lights makes everything come out kinda yellow but Picassa (a free photo editing software) fixes that 90% of the time in one button press (and the rest of the time with a second or third button press).



Here's my photography setup. Except for the camera everything is cheap and it makes the pictures so much nicer.



And you don't necessarily need a fancy camera. I took this picture with my cell phone.









These were taken with my DSLR. They're better than the cell phone picture but it's not a screaming difference. A nice backdrop and bright lighting go a long way.

So there you have it... Model building can be painstaking and trying to do new things can make you nervous, but you learn with experience that there's just about no such thing as a mistake that basic modeling skills and glue, putty, touch up paint, or a bit of well-placed weathering can't overcome. And when you make something good and unique, it's an incredible feeling and you can post it up on the internet and get some well-earned props for taking it to the next level.