

Though a very unique term, it is quite fitting to the practice that it describes. Like the good doctor Frankenstein, the art of FrankenCasing follows the steps of taking parts from one object and adding it to another. In this case we substitute body parts for system components to make our projects come alive!

The theory is simple, commercially manufactured parts are going to be more fitting and more precise than any means one might usually have at home outside of CNC. For example, holes for controller buttons or screen bezels can be cut out using a drill/drill press, files and rotary tools, however the actual piece from the original product is going to be much cleaner and easier to use/mount to your project case.

On top of that, they also often have pre-laid screw posts or button stops that solve problems of say buttons spinning, or mounting the screen to the casing. The only problem comes when trying to fit those components into units they were never intended for. This is where the real hacking can begin, but the fun of it is beyond words!

So let's start with actually using a casing of another product as housing for your system. Unlike Vacuum Forming, in this instance you are using a premade case that was once holding something completely different and are attempting to turn it into a suitable enclosure for you project.

This presents a couple issues right off the bat, the biggest in that now you have to design the internal layout to fit within your casing's constraints versus making a case to fit your layout. Though with a bit of planning, this usually isn't an issue because you will then know what size you have to be within, therefore you find a case that suits those needs. But there is little getting around the fact that FrankenCasing the entire unit will require hardware and component reductions that can sometimes be complicated.

The other big issue is the irregular designs of premade casings which you will have to get around. By that I mean that some casings of say, computer router boxes, were designed for heat ventilation and table top mounting.

Though this might seem ideal, the chances of your components that are actually producing heat being in the same place as the vents are slim. Not that this can't happen, but you'll find yourself spending more time reworking than actually making progress. We have seen several great systems built from router cases as well as kids toys and carrying cases, but thought must be placed ahead of time to ensure you won't hit unfixable snags!

FrankenCasing actual components into the surfaces of the casings is a much easier task and is a lot of fun! With the proper techniques in place, you are able to make some of the most beautiful casings around and make multiple parts fit together seamlessly.

Although simply cutting a hole and placing another part in doesn't sound that hard, it's the work that goes in after it that makes a hack job go from "Meh" to a "WOW!" Here are some general tips to remember when working on your case.

- Keep your cuts small! When working on what is most likely the only case you have, over cutting a hole can become a nightmare and cause hours of extra filling and sanding that didn't need to be done. The same applies for your components. The smaller the footprint, the smaller your cut has to be to begin with.
- Tacking your components in place. You can use a variety of different adhesives to accomplish this, however here you are going to want a permanent foot hold and fusion is the best method of this. ABS/PVC cements or plastic weld are a good choice for most modders as the melting/fusing action ensures that two pieces can become a whole and therefore much stronger. Super Glue or Loctite 401 are also options that work well and are faster drying, but they do not form the melting bond that ABS/PVC cement do over the two or three days it takes for it to dry properly. So depending on the location of the component, one might be more logical to use than the other.
- The right tools for the job. You will need a rotary tool of some kind! Dremel, Black & Decker, whatever you chose is going to be your best friend! Their ability to make cuts, sand and drill with precision is key and a must have. But practice is a must because not only can it make your prized case go from "Hot" to "WTF", you can easily find yourself missing skin before you even felt the contact. And don't "Drink and Dremel", I've not had good experiences with the combination.

# Part Eight

## FrankenCasing Techniques & Process

The next few section's content has been contributed by FrankenCasing master Jon (Hail-razer) Janderan, who's casing and portable making skills are some of the best in the world.

Jon is more into FrankenCasing than I, working with existing cases and building his portables to the case. A difficult method to pull off and to have results come out so beautifully is remarkable!

Enjoy these words of wisdom!

### 1. Adding Components

The first thing you will need to do is determine which parts you will be FrankenCasing into the donor case. Most modders prefer to use the original controller buttons, d-pads, and thumbsticks. That way you retain the original feel of the system. Also it allows you to easily reuse the original controller PCB to hold the buttons and reattach them.

- Pick the controller/component that you will be using and take it apart.
- On the front of the component, using a marker, trace out the area you will be using.
- Using your tool of choice cut out the area you have marked.

Now decide where you will be placing it in the donor case. Bear in mind that you want it to be comfortable to hold AND use. Most modders try to keep it in a similar position and orientation as the original controller or component.

- Go ahead and set the part on the donor case where it will be located and using the marker trace an outline.
- Using your tool of choice cut out the area that you have traced. Place the part in the cut on the donor case and check the fit. You may need to re-cut some areas to get a good fit. As previously mentioned try not to cut to big a hole as you will have more to fill later.

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### 2. Attaching Components

- Now with the part placed in the donor case you need to temporarily hold it in place.
- A few small dabs of hot glue on the top side of the part will work as will a few pieces of tape.
- Once this is done turn the case over where you can access the backside of the part.
- You will be using the adhesive of your choice now to bond the part to the inside of the case.
- Some prefer Abs cement because it permanently welds the plastic together but because of the long drying times some use epoxy instead.
- No matter which you decide to use the application will be the same. Apply a liberal amount of the adhesive, enough to cover the edge of the part and the inside of the case.
- You can use a q-tip or Popsicle stick or something similar to apply the adhesive, just be sure to not cover any of the button holes.
- Some adhesive might seep through to the other side but that is fine.
- Allow plenty of time for the adhesive to set up before going on to the next step.

### 3. Rough Finish on Components.

- Now we will be making the parts look good on the outside of the case.
- Using an epoxy or filler we are going to fill in the gaps and spaces that we have in between the parts and the donor case. Mix your epoxy or filler properly and then apply a liberal amount into the cracks and gaps.
- Feather it outwards slightly so that it will blend seamlessly into the donor case.
- Don't worry about making it pretty , that will come later, just be sure to fill the gaps and cracks with enough the first time so you make less work for yourself later.
- Allow the epoxy or filler to dry the recommended allotted time.
- After the filler has dried it is time to sand it down. You can start with a fairly rough sandpaper. I prefer starting with around 60 grit. If you have a palm sander , using it will cut your sanding time down dramatically, and they can be purchased fairly inexpensively.
- So get started and sand , sand , sand. Sand the filler until it is just BELOW level. We do this because we will be adding another small layer of filler to fill in the small air holes and low spots that will appear no matter how good you applied the first coat of filler.
- After you have sanded the filler down to slightly below level go ahead and apply an other thin coat of filler.
- If the majority of the area is good you can just apply it where needed.
- Allow it to dry.
- Now sand the areas you just filled until it is smooth with the surrounding area. Start with the 60 grit, but don't sand down too far.



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- When you start getting close it is time to switch to a higher grit. I prefer 100-120 grit next. Using the 100-120 grit sandpaper, sand the entire area until it is smooth.
- Check for low spots and air holes. If you find any now is the time to fill them again and repeat the above steps.
- If no flaws are found move on!
- You can now switch to 240-320 grit sandpaper. Continue sanding until it is perfectly smooth.
- Repeat the above steps until you have all of your components installed.

