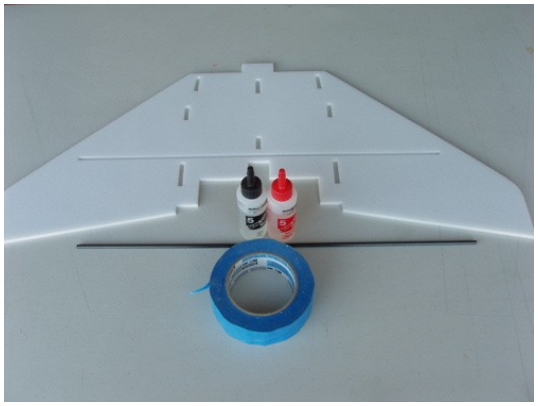
Quick Build F-22 Raptor

This kit is very simple to put together. The biggest danger in messing up this kit is gluing the pieces to your work bench. But before you begin, take a couple of minutes to read over this entire construction guide as well as the parts in your kit. It's just a 3D puzzle with all interlocking pieces. Total construction time is about 2 hours and then you can take as much time on your finishing as you want.

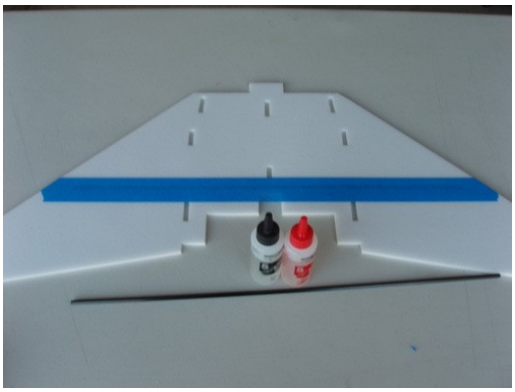
Glue: We recommend using 5 minute epoxy for gluing in the carbon fiber wing spar and UHU Creativ glue for foam for just about every other joint. But you can use 5 minute epoxy on the entire plane and it really won't make a big difference. For a real quick build, you could even use hot glue on everything but the carbon spar, but we think that is not a great option. One more thing: we recommend you dry build you entire plane using some tape to hold everything together. It lets you see how things fit and lets you plan out your build. Plus, if you are planning on doing any painting, IT MIGHT BE EASIER TO PAINT IT BEFORE YOU PUT IT TOGETHER.

Last but not least, we want to thank Tomas Hellberg for giving us permission to kit this awesome design. Now onto the build!

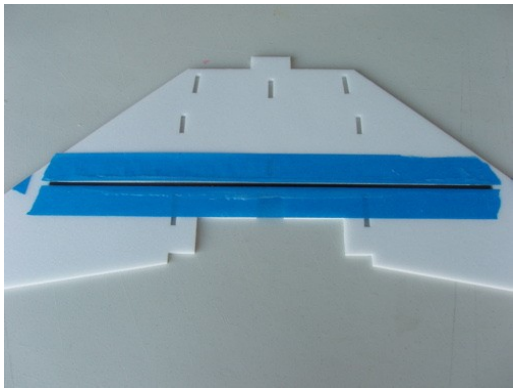
1. The carbon spar. The carbon spar is important because it gives your plane the needed strength on the wings to withstand all the forces of nature. So take your time on this. Also, this step has a good chance you could glue the wing to your workbench. Don't do this. It won't improve the aerodynamics of your workbench. Use some wax paper, or some extra tape or just be careful. Get your wing out, your 5 minute epoxy, some masking tape and your carbon rod. **NOTE: This picture is a different wing, but the process is the same.**



Next, figure out which side of the wing will be the top side. Mask over the slot in your wing using masking tape or painters tape as shown. NOTE: You might have to extend the slot a bit with a sharp hobby knife.



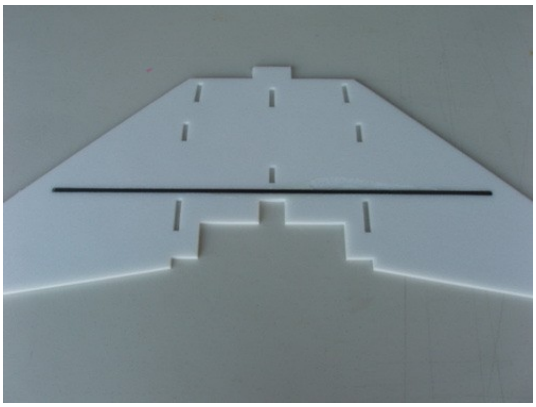
Then flip the wing over, mask on either side of the slot to prevent excess epoxy from getting all over your wing.



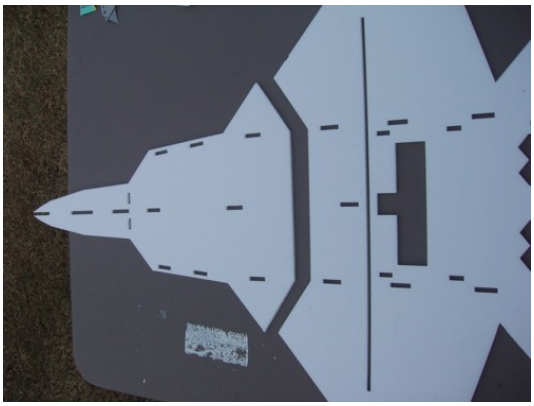
Now, mix up a good amount of epoxy and stir well. The key with epoxy is to really get it mixed well. So mix it like crazy. We recommend using a small cup made of paper or something so you can bend the lip to make like a little spout, but any container will do.

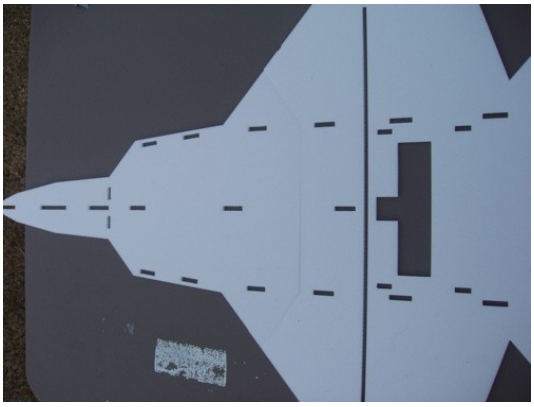
Next, and this is important, make sure your rod is NOT in the slot. The picture above shows it in the slot but we were just test fitting the rod. Then pour in the epoxy the length of the slot and even it out within the slot. Insert rod and mash down hard. Wipe away any excess epoxy that oozes out. It helps if you have a good piece of card board or something to use as a squeegee.

Now remember about gluing your wing to the table? Now is a good time to check if your tape on the bottom blew a hole in it and leaked epoxy all over the place. If so, wipe it up and make sure you don't glue the wing down. Can you tell we have glued our wing down a time or two? Okay, don't wait too long, like 5 minutes and remove your tape. That is pretty much the hardest part, and you are done!

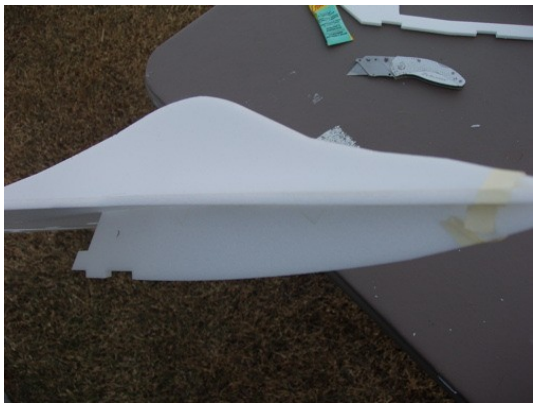


2. Front fuselage assembly. Next, we recommend using epoxy for this step too, it makes the rest of the assembly go a little quicker if you have a nice rigid joint here. Mix up a bit of epoxy and spread on one side of the joint and push it together. Make sure here not to glue to the table again. Really, this happens a lot. **NOTE: Below is what your airplane should look like.**



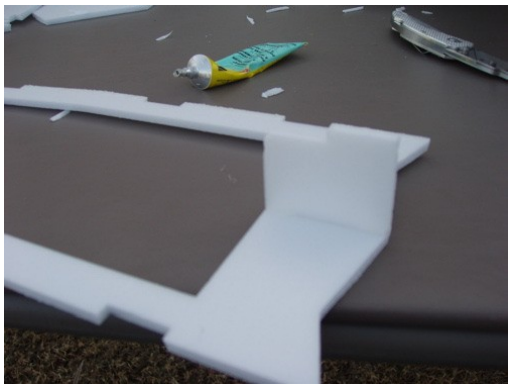


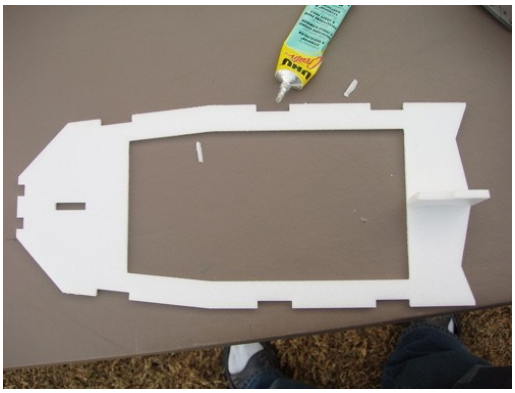
3. Next, let's get the canopy and forward lower fuse pieces and connect them. We used UHU Creativ for foam glue for all other joints from this point forward unless noted.

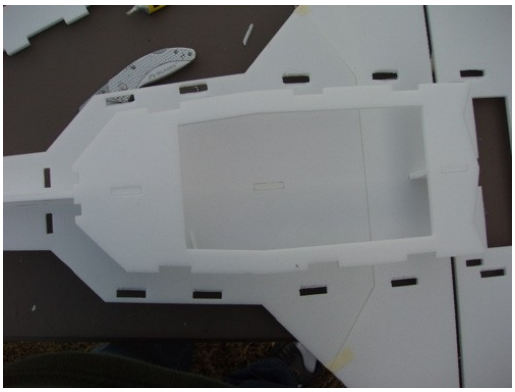


Make sure you attach the canopy (big piece) to the top of your wing (as discussed the first steps). Attach the lower and upper piece through the slots.

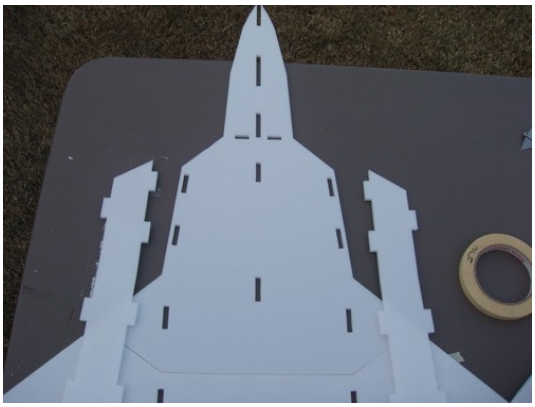
4. Bottom Fuse. To prepare to mount the bottom fuse piece, first locate the little piece that bridges the gap between the wing and the bottom fuse. Glue into place as pictured. You may want to use epoxy on this small piece, since the motor mount attaches to it. Next, attach the bottom fuse piece. It will not be attached well, as it sort of floats, but make sure it is centered and on straight. Doing this first, makes it easier to attach the intake pieces later.







5. Engine Intakes. Find the two pieces that make up the engine intakes.

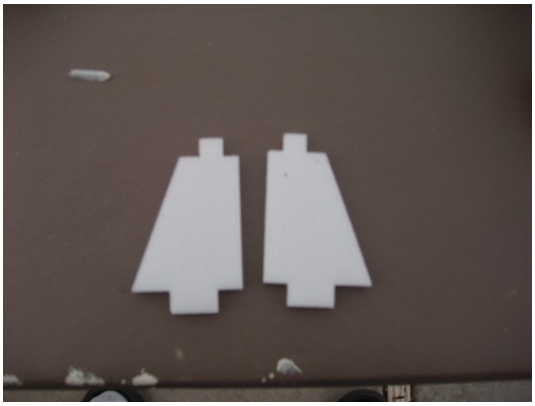


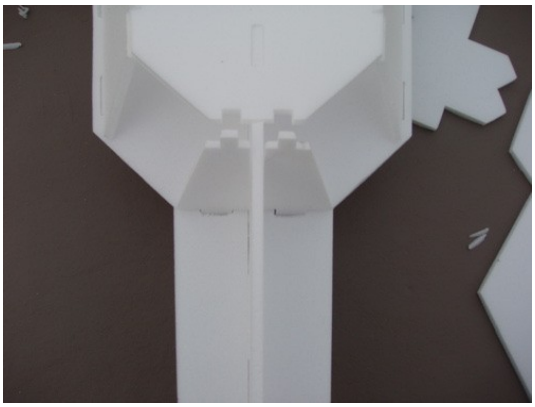
Now because this is an F-22, and because all the cuts on your kit are at right angles, this part takes a bit of patience, and a little trim work on your part. No big deal. You will need a sharp hobby knife or razor blade. Sharp being the key word. If you insert the intakes pieces into the tabs, you will notice a

considerable gap between the edges of the intake pieces and the bottom fuse piece you just attached. This is because the intake pieces angle inward to meet up. In order to allow the pieces to tilt inward, you may have to trim out the slots in the main body/wing of the model. We just trimmed the corner on both sides of the wing to allow the tabs to better tilt inside the slot. See Picture below. This step can take a bit of time, but just take it slow and dry fit each side using some masking tape or pins. Then glue up each side, making sure you glue the intakes sides to both the body/wing and the bottom fuse piece. This is where a contact cement like UHU Creativ comes in handy.

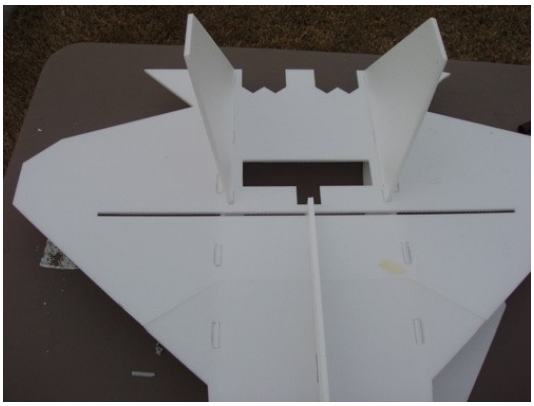
If you flip your plane over, you will notice the tabs extend through the top of the slots slightly. Trim or sand as desired. You can fill in any gaps with some light weight spackle if you want to improve the appearance of the aircraft.

6. Front Intakes: This step is very similar to the side intakes, requiring you to trim a bit to make them angle correctly.

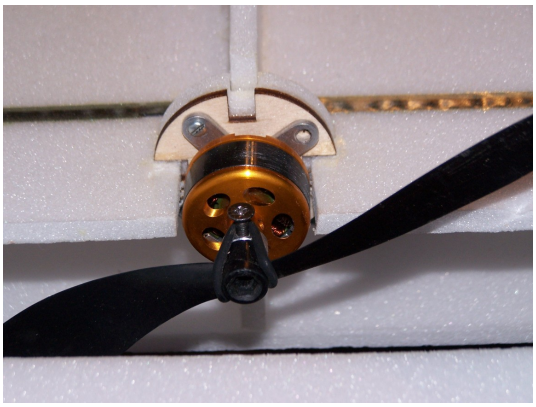




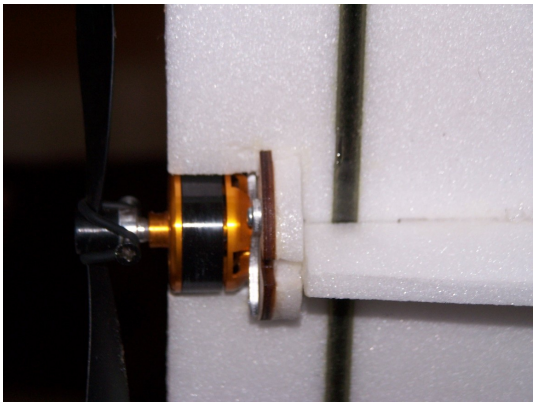
7. Vertical Tails. The F-22 also has angled vertical tails that roughly follow the same angle as the side fuselage pieces you mounted in step 5.

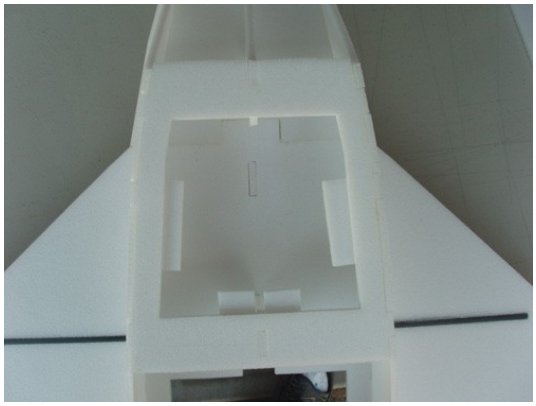


Insert the tail piece into the slots on the top of your model and again, trim a bit to allow some free movement or just work the foam a bit to achieve an outward angle, matching the angle of the intakes. Glue into place. You may want to use epoxy here as well. It is important to get the tails at the same angle, though if they are a little off, it won't matter much. So don't panic.

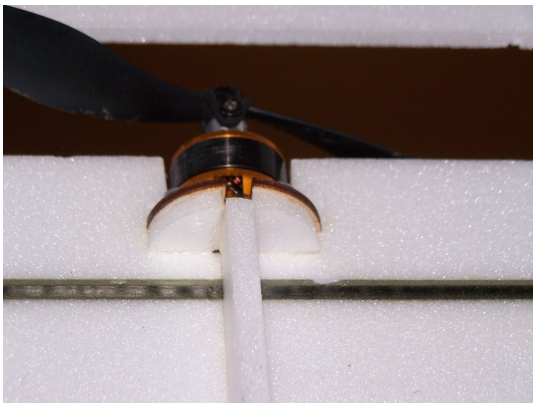


9. Hatch construction. This is the part that might take some creativity on your part. The hatch piece can be attached about a million different ways. Velcro, magnets, and good old fashioned duct tape just to name a few. But you will need to use some scrap pieces of foam (included) to let the hatch stay in place. See below. NOTE: Picture is not of your plane, but the process is the same.

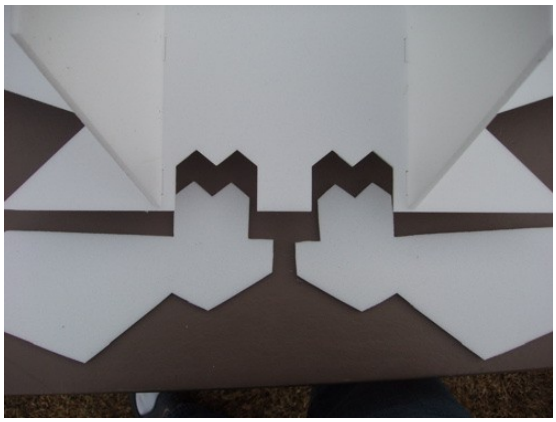


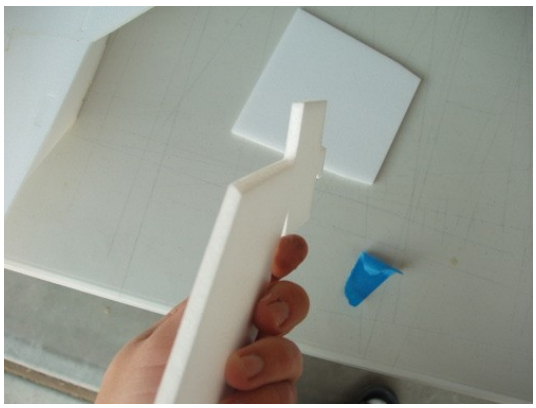


10. Motor Mount. In you kit you should have a ply piece and a little foam disk that match up. Go ahead and laminate them together with some epoxy. Then, mount it to the motor area using epoxy.



11. Taileron Prep. You will need to attach your tailerons next. First you will need to bevel the edge so the hinge works properly. See pictures. Using hinge tape (not provided) or some 3M scotch tape, attach the ailerons to the body. You may need to sand these pieces a bit to make sure they do not rub on each other in the middle.

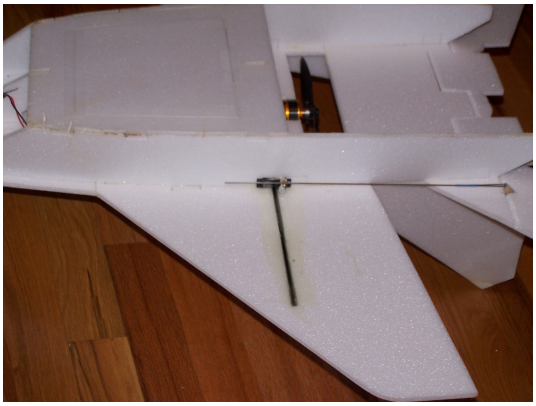


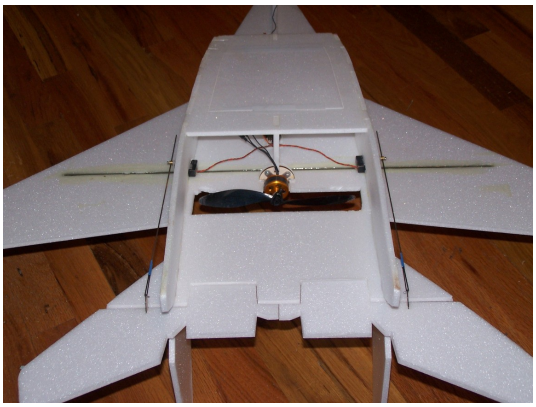


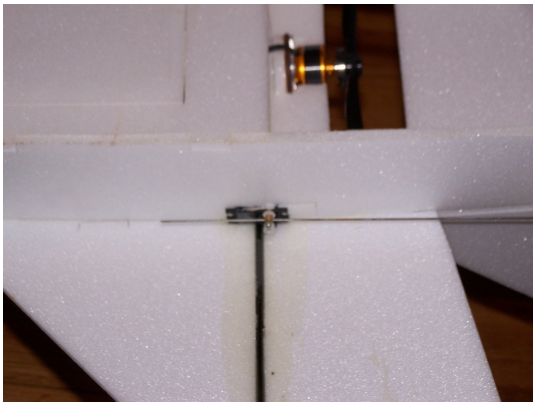
Here (below) you can see the beveled gap in the taileron to allow for free movement positioned on the bottom of the plane.

Servo and control horn mounting. This is all about preference. You can mount your servos pretty much wherever, but we prefer under the wing and right over the CF rod. This gets all the wires inside the box on the plane and makes it easy.

Study the pictures below. **NOTE: Again, different plane, same process.**







12. Connect up your electronics and paint as desired.

Note on finishing. We coated our entire airplane with some Minwax water based polyeurathane. It came in a spray can. We did about 2 coats and it worked great. Then we just used regular spray paint and some masking tape to finish it off. The Minwax protected the foam from the foam eating regular spray paint. It was like a force field in a spray can. The bottom line here is test out your paint on some spare foam or only use foam safe paint. It will melt your airplane if you are not careful.

Center of Gravity Location is 3.25” rear of the wing break (wing break is shown below)