

B9 Robot Claw Finishing Instruction Manual – Laboratory16.com – Robert Rossi B9-0694

Your new B9 robot claws are made of a really tough material filament called Carbon fiber HTPLA. This instruction sheet will help you prep your claws and get them ready for painting your finish coat of red paint. Please read through this entire instruction manual before starting. I'd like to thank Todd Mustachio and Gregorio Padin for all their hard work on this project. Todd the pics you provided and the finishing instructions are just great thank you for your superior expertise in model finishing.

Supplies needed

Automotive filler primer (Duplicolor Refinish Filler Primer)
Bondo glazing spot putty
Wet Dry 180 and 400 grits
Plus, Lots of running water!



Pic 1a

When a 3d part is printed there is a need for support material to be placed in areas to hold up overhangs. These support structures will need to be removed. Carefully cut away the support material with a sharp utility knife. WEAR SAFTEY GLASSES – HTPLA fragments are SHARP and will cut your eye. Support material has a tendency to fly through the air when be removed. – Clean up fragments that may be on floor – Pet Safety.



Pic 1b

Carefully cut away the support material. Take your time and do a good job.



Pic 1c

The claws have been drilled here at my shop, however if your axles are a bit tight you may use this technique to open the hole up a bit. Be really careful with this step because you do not want to make the hole off center. **Only use these techniques if you are having issues with clearance of parts.**



Pic 1d

Next clean out the axle holes with a 1/4" drill bit. Best to do this with a drill press to keep the holes aligned straight. This is very important later on so the claw tips line up together when in the closed position. Test fit one of the supplied aluminum axles. It should rotate freely if you intend to motorize your claws with a servo. (The Claw assembly manual will cover non-motorized claws and motorized claw configurations.)

The claws have been drilled here at my shop, however if your gear is not seating flush you may use this technique to allow the gear to seat better and sit flush with the claw. **Only use this technique if you are having a problem with a clearance issue in the wrist center.**

Warning Danger Will Robinson!

Please note: The next step requires partial drilling—DO NOT DRILL ALL THE WAY THROUGH YOUR CLAWS



The gear should seat relatively flat here. When you go to assembly the claws into wrist center you will see if there is a problem with clearances at that time. If it is close to being flush with the claw here it should be ok. Just check it once you put it in the wrist center piece.

Pic 1e Only use this technique if your gear is having a clearance issue in the wrist center.

Using a 1/2" drill bit clean up the wider part of the hole.

DO NOT drill all the way through!

This is where the brass gears mount.

Test fit your gears! They should go all the way in and sit flat.

If there is still a gap carefully use the 1/2" drill bit again to make the hole slightly deeper.

DO NOT DRILL ALL THE WAY THROUGH!



Test fit your gears for gear position too! They should go all the way in and sit flat AND should mesh together nicely. This position will be critical when it comes time to motorize them. We mention it here in the paint and finishing guide so you won't forget about it when the epoxy step comes. If there is still a gap use the 1/2" drill bit again to carefully make the hole slightly deeper. In the picture above keep in mind when you go to epoxy these into place the gears must be aligned so the tips of the claws align...and the meshing of the gears are also meshed properly. Carefully study the figure above.



Pic 1f
Your claws have layer lines from the 3D printing process.
In the following steps we will go from this to a smooth surface ready for paint.

WET SANDING

This is the longest and hardest step. Wet Sanding. Lots of careful wet sanding!



Pic 1H

Using 180 grit wet dry sandpaper sand all surfaces under running water. This technique keeps the sandpaper from becoming plugged and makes it last a long time. I completed all the steps in this tutorial with just 1 sheet 180 and 1 sheet of 400. If you put the proper amount of time in here at this stage, you will have an outstanding set of claws for your robot. This step is critical to get right...it takes lots of time and patience. So prepare yourself...Do a good job – Don't be like Dr. Smith! Oh the pain!

Sanding Blocks can help on the flat areas: There are many techniques that can be used to help finish your claws. Some of you may be expert builders other might need some wet sanding tips found in this guide. When wet sanding large flat surfaces some builders find that using a sanding block may really help out a lot. Just be careful not to take off too much material. Going slow has its merits, you can always take off more material. But you can't put back on. So take your time and get the job done right the first time.



Pic 1i

When you are done it should look like this. What you are trying to do is flatten the tops of the layers. The more work you do here will make the following steps less difficult.



Pic 1j
Smear Bondo glazing putty on all surfaces and let dry for at least an hour or two.



Pic 1k

Wet sand again using 180 grit paper. It is very important to sand **against** the layer lines from now on. We are trying to keep the putty in the low spots of the layers. If you sand the same direction as the layer lines it will remove the putty from those low spots. When you are done it should look similar to this.



Pic 1L



Pic 1G

In a well-ventilated area spray a few coats of filler primer on to the claws. Let dry 10 min between coats. Let dry for a few hours.



Pic 1m

When the primer is dry you will see a few spots that may need some more putty. Spread putty in very thin coats over the spots that the layer lines are still visible. Let dry for an hour.



Pic 1n
Using 400 grit. Lightly sand all surfaces under running water.
After this step it will feel very smooth to the touch.
Don't worry if you sand down to the black in spots.



Pic 10

Spray a few more coats of primer. And your claws should look really smooth. If not, lightly wet sand with 400 grit and prime again. Repeat these steps until smooth. When you are happy with them, **let them dry for at least a week** before painting with your favorite red color. Recommend using an automotive color paint such as Dupli-Color. We recommend letting the claws dry at least a week, so when you go to apply the final coat of Red Paint that it will go on flawlessly without crackling. The solvents in the bondo glaze must be allowed to dissipate. Do not rush this process. It will indeed be worth the wait.

Gallery of pics (Todd Mustachio's AWSOME WORK on the B9 Carbon Fiber Claw Kit)

