Grabby the Claw - a quick calibration test for 3D printed action figures!

soozafone

VIEW IN BROWSER

updated 23. 6. 2025 | published 23. 6. 2025

Summary

A small and fast print that will help you dial in settings before committing to my larger 3D printable action figures.

Toys & Games > Action Figures & Statues

Tags: poseable actionfigure lucky13 dummy13

Introducing Grabby the Claw!

This model is designed to use all of the main connection types that you'll find in my 3D printable action figures.

It uses only a few grams of filament, and prints in about half an hour on modern printers.

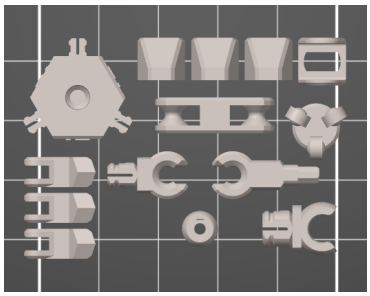
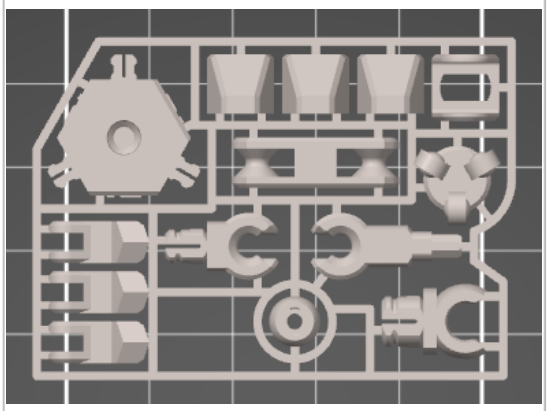
That means it's a great way to dial in your settings and troubleshoot problems on a small scale, before committing to one of my bigger designs.

Plus, your feedback will help me make better designs in the future!

Before we begin

This is one of my fastest and easiest prints, but I still recommend that you at least have a satisfactory Benchy under your belt before diving into jointed figures like this one. The troubleshooting guide in this description focuses on the issues I see most often with my models - it's not a comprehensive guide to tuning your printer in general.

The parts are offered in two styles: one file with a full set of separate parts, and one with the parts connected on a runner (or kit card). If you want to work with individual parts, your slicer should be able to split the STL into separate objects.

	
Parts	Runner

Print settings

Parameters not listed can stay at your slicer's default value.

Filament type	Best results: ABS, ASA Also good: PETG, PCTG PLA is not recommended.
Layer height	0.15mm
Infill	15%
Supports	none
Perimeter generator	Arachne
Additional settings	☑ Print external perimeters first

Why no PLA?

PLA has a high tendency to **creep.** This means that the material relaxes over time, making the joints go “floppy.” It's also quite stiff, and brittle, leading to sore fingers and broken parts.

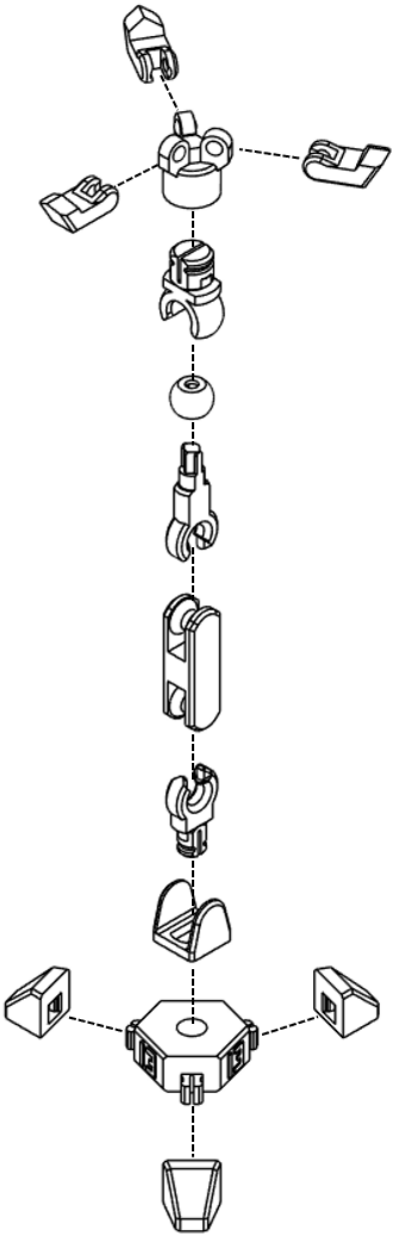
Feel free to try it for yourself if you don't believe me!

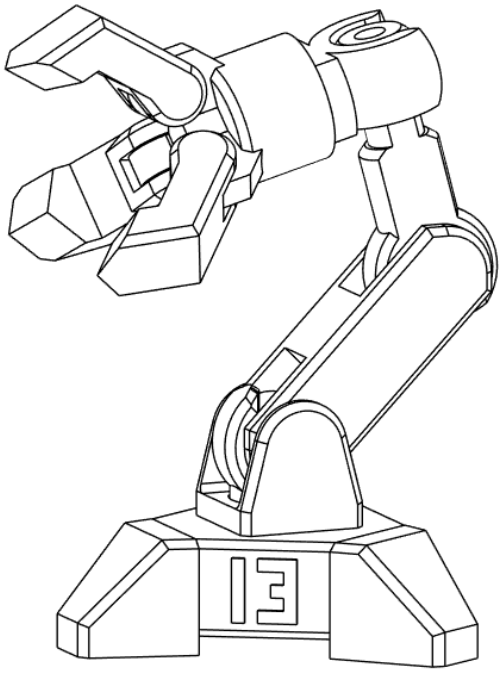
Assembly

If you printed the “runner” version, start by snapping the parts off of the runner. The “gates” where the runner contacted the parts can be cleaned up with a hobby knife.

All parts should snap fit firmly into place as shown without tools or glue.

If any connections take more than a moderate amount of force to come together, stop and look at ways to improve the fit. There's no need to push until your fingers bleed, please!





Troubleshooting

Please note that this is not a comprehensive guide for fixing print issues - there are better resources for that already. Instead, this chart focuses on those issues that I see most often with my designs in particular.

Problem	Possible cause(s)	Solution(s)
Parts detach from the bed during printing	Print surface is not clean	Clean your build plate with dish soap and warm water
		Avoid touching the build plate with your bare hands

Problem	Possible cause(s)	Solution(s)
	Parts are knocked off by nozzle motion	Clean the nozzle with a brass brush to remove clumped filament
		Tune retraction settings to reduce clumping/stringing
		Reduce printing speed - especially in the first layer
		Avoid using “self crossing” infill patterns like Grid or Cubic
	Print bed needs more adhesion	Apply a light coat of liquid glue to the build plate
		Make sure you are using a print bed that is appropriate for your filament type
	Parts need more surface area to stick to bed	Add a brim to the parts in your slicer
		Use the “runner” version with all parts linked together
	Residue from incompatible materials	Clean your build plate when switching between filament types (e.g. from PLA to PETG), or use a dedicated build plate for each material type
Parts have extra strings or blobs of filament	Filament oozes when not extruding	Ensure that your filament is dry
		Tune retraction settings
		Use a heat gun to remove stringing
	Overhang perimeters are detaching	Turn off “print external perimeters first”
Poor quality at the top of small parts	Insufficient cooling of small layers	Increase cooling fan speed
		Print more parts at a time
		Print another model at the same time (it should be at least as tall as the problem parts)

Problem	Possible cause(s)	Solution(s)
Parts don't fit / are too tight / take too much force to assemble	Printed perimeters are oversized	Tune extrusion multiplier (make it smaller)
		Apply XY size compensation (try +.05mm to start)
		Print external walls first
		Sand or file the parts for more clearance **(wear a respirator, plastic dust is bad for you)**
	Material is too stiff	Use a more flexible material (PETG/PCTG)
	Parts are out of tolerance due to small printer variations	Print the parts larger to reduce the proportional effect of printer variations (try 150%)
	Parts are warping during printing	Add a brim to the parts
		Keep printer out of drafty areas
		Print in an enclosure
	Parts assembled incorrectly	Check the instructions for the correct parts and orientation
	Parts printed at a size much larger than default (>300%)	Use a more flexible material (e.g. a TPU blend)
Parts are too loose (immediately after assembling)	Printed perimeters are undersized	Tune extrusion multiplier (make it bigger)
		Apply XY size compensation (try +.05mm to start)
		Disassemble the joint and apply a thin coat of nail polish or superglue to the interface, let it dry, and reassemble
		Disassemble the joint and add a small amount of poster putty (blu-tack) to the interface, then reassemble

Problem	Possible cause(s)	Solution(s)
Parts are too loose (a while after assembling)	Material is subject to creep	Avoid materials like PLA with high creep levels (ASA has the best resistance to creep in my experience)
Parts break when assembled	Brittle filament	Ensure filament is dry, properly stored, and not too old
		Use a more flexible material (PETG/PCTG)
Parts are too small to assemble	I mean they are pretty small, I'll give you that	Print larger! You should be able to scale up to at least 250% without issues.
I printed everything in PLA and it seems fine!	Creep hasn't set in yet	The main problem with PLA is creep, which happens over time. Check back in a week or two and Grabby won't be feeling so good. If you manage to find a brand of PLA that doesn't creep, I'd love to hear about it!
Made my fingers BLEED when I put it together!	Parts are too tight, see above	It shouldn't hurt to put this together! Take a step back and look at how to improve the fit to require less force.
My problem isn't on this chart	Are you sure?	Better double check!
	Yes, I'm sure	Take **clear pictures** of the problem and post them in the comments with as much information as you can. I can't respond to every DM. Posting your issue publicly invites the community to help, and documents the solution for people in the future who might have the same problem.

I welcome feedback and suggestions of how to improve these 3D printable joints. But please keep it constructive :)

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This is a test file meant for personal use, so I have uploaded it on a more restrictive license for now.

Remixing is not allowed. Sit tight though, I am working on more guides to designing your own articulated figures.

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Thanks, and happy printing!

Model files

grabby_parts.stl

grabby_runner.stl

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