



Pinned version of Simplified Mandalorian Pulse Rifle



WhatWouldAnEngineerDo

VIEW IN BROWSER

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Summary

This print is a remix of this print on Thingiverse: <https://www.thingiverse.com/thing:4053444>

[Toys & Games](#) > [Outdoor Toys](#)

Tags: [mandalorian](#) [cosplayprop](#)

I decided to build [the simplified Mandalorian rifle posted by Straeker](#) as a friend's costume prop, but:

- I did not trust myself to be able to align and glue the parts together without issues
- I wanted to make some of the parts a little easier to print and assemble

I had seen [the parametric snap pins posted by emmett](#) a while ago, so I thought I would experiment with mixing the two. This set of files is the result of my efforts.

I have identified this post as "A Work in Progress" because IF I was going to be making more of these rifles myself, I would probably want to rework some of the files that I actually used in my own build.

I have successfully assembled precisely one rifle using these parts. The hard part was figuring out which type of glue would hold it all together.

As it happens, I do not presently expect to ever make this thing again, so I am offering these files with a few cautions for anyone tempted to use them.

- Assembling and finishing this model will likely require using a 3D pen and/or a soldering iron to fill/weld the joins or putty to hide the joints and painting to hide the putty. (I suppose that is also true of the original model, so not a con of this design.)
- I did successfully print and assemble the parts you see here, but that work was not done completely without issue. (e.g. In some cases, I had to shave the tips off the pins a little, to get the parts to fit flush against each other.) It may be worthwhile to check out emmett's other snap pin designs, which I did not.
- I did not change the dimensions of any of the mating faces, so these parts should be completely compatible with the original thing, if you just want to use a subset of these files together with the originals in a single assembly.
- the snap pins alone will not hold this rifle together tightly. You will still need to glue the joints.
- I first used superglue, then gorilla-brand superglue gel and finally JB Weld Plastic Weld (two part epoxy putty) to assemble these parts as a rifle. In the end, the JB Weld did the trick, but the superglue and gel both seemed to work for a while and then let go.

The pins may help prevent shear forces from shattering the glue if the rifle is dropped, but there is just too much leverage on any joint to stop a joint from ripping apart. If you bend the rifle and gravity seems to cause superglued joints to fail by doing just that.

In retrospect, a metal rod down the inside of the assembly is definitely the better Engineering approach than using these snap pins, especially for the joint in the middle. If you are prepared to go that way, check out this excellent make by TheMazeEcho: <https://www.thingiverse.com/make:787318>.

I am surprised and disappointed that even the Plastic Weld has not proven strong enough to hold these joints by itself for my build. Probably because the plastic weld is not bonding well to surfaces which are now coated smooth in superglue residue. I finally drilled out the pin sockets between sections 06 and 07 and inserted a metal drinking straw to add strength at the middle of the assembly. In this case, 10% infill proved an unfortunate choice since it left <https://www.thingiverse.com/thing:213310> for the straw to hold on to. I packed epoxy into the hole, to anchor the straw into epoxy which in turn is bonded to the infill. The cured joint in the morning did

seem solid, so problem solved I think. I recommend that anyone building a rifle from these parts should only use the Plastic Weld and should skip the superglue. If you print with the mating face on a raft, that face should be rough enough to bond well to the epoxy. Mating faces printed as the top of a part should be roughed-up with a file or coarse sandpaper, to help the epoxy bond. You may want to print 06 and 07 with 20% infill or more, if you plan to drill a hole in each piece and fit a rod down the center, as I did, though you might try just the epoxy and pin first.

You may also want to weld the joints with your soldering iron, as I did, to add a bit of insurance, at the cost of some of its "good looks", if you plan to use yours as a costume prop.

Let's face it, Mando is living from paycheque to paycheque and his rifle likely gets a lot of DIY repairs & battle damage. I figure all defects visible in this build are like scars on an expensive leather jacket, they add interest and authenticity.

Print Settings

Printer Brand:

Creality

Printer:

Ender 3

Rafts:

Yes

Supports:

Yes

Resolution:

0.28mm

Infill:

10%

Filament: Noulei PLA

Gold

Notes:

I also used MG Chemicals Black PETG to print the rifle barrel sections, eSun Brown PLA+ to print the stock and Eryone Silky Silver PLA to print the trigger + trigger guard.

I used Cura 4.7.1, printing at 60mm/s infill speed and 30mm/sec for the walls. Initial layer speed was 20mm/s.

I used rafts when I was not sure that the print would remain stable throughout the print. With a roof density of 33.3%, both support and rafts peeled off the print very cleanly and easily.

I used the Cura "Infill Support" function to reduce the amount of plastic used, but 10% was the least amount of infill structure that I trusted to support the snap pin sockets as they printed at the top of each piece.

I printed 3 walls, but used 2mm of top and bottom layers to ensure the stiffness of the mating faces and so that the pin sockets would not rip out under torsional stresses.

Post-Printing

Assembling Section 03 - Glue Trigger Guard to Receiver

I recommend that you dry-fit the trigger guard into the recess in the bottom of the receiver, before gluing these parts together.

NOTE that there is a small (2.1mm) hole in the base of the trigger guard thing, and a matching hole in the base of the receiver. To align these two parts when gluing, cut and insert a short segment of 1.75mm filament into one of the two holes and use it as a pin to ensure the correct orientation and alignment of the two parts to each other.

There is a similar pinhole in one end of that trigger guard plate, but you will notice after printing what I did not notice when I put that hole there. I just lived without it & could not be bothered removing it again. The edges of the recess in the receiver provide enough help aligning the two parts without needing to add the second pin.

How I Designed This

I used Microsoft 3D Builder to make the following changes to Straeker's original thing's sections:

- Added emmett's snap pin sockets to the mating faces of each of the existing sections
- In some cases (e.g. Section_03), split the model sections down further, to enable me to print subsections with different orientations from each other

- Digitally merged the severed parts of the rangefinder scope back into sections 05 & 06 so that they do not have to be glued during post-printing.
- Merged a couple of free-floating pieces into the single thing.
(Probably artifacts of things where Straeker's detailed model (from which he derived the simplified model) contains some moveable features not present in this version.)

In some cases, I used the MeshMixer "Edit>Make Solid" feature to remove hidden internal details from a section or to "fix" a damaged mesh when 3D Builder could not.

Category: Toys & Games

Model files



mando_rifle_butt_02pinholes.stl



mando_rifle_03_triggerguardonly.stl



mando_rifle_09pinholes.stl



mando_rifle_04pinholes_2-vertical.stl



mando_rifle_04pinholes_1.stl



mando_rifle_05pinholes_2.stl



mando_rifle_10pinhole-l.stl



mando_rifle_05pinholes_1.stl



mando_rifle_08pinholes.stl



mando_rifle_06pinholes.stl



mando_rifle_03_receiveronly.stl



snappinx1.stl



mando_rifle_butt_01pinholes.stl



mando_rifle_10pinhole_r.stl



mando_rifle_07pinholes.stl

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