CAG19

A Californian’s guide to the legal process of 3D printing and assembling a Glock19 carbine

Remix of: FMDA DD19.2 rev1.2

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Preface

Consider supporting me

BTC Address:

bc1q647djkj4k3kd2ldp79yl9nl7ugxh3ymg6zs34p

Any amount helps and allows me to continue making projects like these

This project is aimed to provide Californians with the entire legal process to print and assemble a California compliant Glock19 carbine.

Special thanks to The Gatalog for the DD19.2 v1.2 Glock frame, of which this entire project is built upon and wouldn’t be possible without.

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Background

Why would someone need to print this monstrosity rather than a normal Glock handgun within California?

This is all due to the handgun roster. Where “unsafe” handguns are not allowed to be sold to citizens (except law enforcement). Only a specific list of handguns that are listed as “safe” are allowed to be sold by gun stores to citizens. When it comes to manufacturing your own however, you are not the licensed manufacturer of whatever model you are building, and therefore is still deemed as an “unsafe” handgun.

All of this information can be found in the link: **https://oag.ca.gov/system/files/attachments/press-docs/consumer-alert.pdf**

Therein lies the goal of this project; to give Californians the option of easily and legally, printing and assembling a Glock carbine.

Shopping List & Tools Required

Since this is an add-on of the DD19.2 frame, you will need everything listed in that tutorial (completed upper + trigger assembly + locking block + rails). Reference that tutorial for the full guide of building and assembling the frame.

Qty.	Item	Description
		Materials
1	16" Glock barrel	9mm gen 3 & 4 barrel (threaded) https://www.zfi-inc.com/product/glock-16-barrel-igb-austria-16-inch-barrel-for-glock-17-17l-20-21-22-24-31-34-35/
1	Stainless steel block	0.375” x 1.25” x 2” piece of 17-4PH Stainless Steel https://www.onlinemetals.com/en/buy/stainless-steel/0-375-x-1-25-stainless-rectangle-bar-17-4-ph-cond-a-hrap/pid/23217 (select "custom cut" and enter 2")
7	Phillips screws	6-32x1-1/4” phillips machine screws https://www.mcmaster.com/90604A313/
7	Hex nuts	6-32 hex nuts https://www.mcmaster.com/90480A007/
4	Set screws	8-32x1/2" https://www.mcmaster.com/91375A774/
		Tools
1	Screw cutter	https://www.homedepot.com/p/URREA-8-1-4-in-Super-Duty-Wire-Stripping-Pliers-with-Terminal-Crimper-and-Screw-Cutter-298P/202797817
1	Phillips screwdriver	Must have a shank of 3” or longer and diameter of 1/4”(7mm) or less
1	Hex key	5/64"
		Extras
1	Freeze pops	In case it gets hot while the printers are poppin' off ;) https://www.mcmaster.com/food-service-equipment/freeze-pops/

Recommended to use the links for the first two items, everything else is able to be easily sourced from local hardware stores. Local hardware stores will also have smaller quantities of screws and nuts available.

Legal Process & Guide

This section will help to guide anyone that may be confused with the UNSA application process.

(This is not personal legal advice, but rather as a general guide of how to complete the Unique Serial Number Application)

It is recommended to start the UNSA application after you have received your stainless steel block and know where to get it engraved. Some gun stores can do this for you or general engravers in your area. Engraved text is required to be a minimum depth of .003" and text no smaller than 1/16".
https://www.atf.gov/firearms/firearms-guides-importation-verification-firearms-ammunition-firearms-verification-overview

This is the general process of what you would do:

1) Go to https://cfars.doj.ca.gov/login and create your account or login if you already have one

2) Complete the firearm safety test *or* handgun safety test at a local gun store

3) Mail or FAX a copy of your ID to the CA DOJ as described on the UNSA webpage

4) Go to: "Requesting serial number because I plan to manufacture or assemble a firearm" (at the very bottom of UNSA webpage)

5) Fill out all required "Applicant Information"

6) For "Firearm Information":
    a) Firearm Type will be: RIFLE
    b) Category will be: CARBINE (optional)
    c) And it is recommended to select YES on "Receiver Only?"
    d) Model is optional, but you would input "G19" for this build
    e) Input the date that you plan on manufacturing (remember you will only have 30 days to manufacture once you get the approved serial number)
    f) Material will be: POLYMER
    g) Submit your application and pay the $35 fee (Approval should be fairly quick)

7) After receiving a letter online from the DOJ containing your serial number, engrave each of the following on your steel block:
    a) Serial number
    b) Your first and last name
    c) City and state of manufacture ex: Los Angeles, CA
    d) Model (if you have denoted what model on the application)
    e) Caliber (should be “0000” for all self made firearms)

8) Print the remixed frame and insert the steel block in the middle of the print. This will entrap the steel block, permanently fixing it in the frame. (more info on this in the Printing section)

9) Once the frame is fully finished and supports are removed (don’t need to insert trigger assembly yet) take the (4) pictures as described on your UNSA form and upload them

That’s all that’s required to manufacture the frame legally, from here you can assemble the rest of the rifle.

Important Notice:

While this remix is able to be held and shot just like a regular handgun without the fin-grip, stock, and 16” barrel, it does not mean that would be a legal configuration. Remember that what you have made is legally classified as a “rifle”. Which means when the firearm is in a “fireable configuration”, the OAL (overall length) of the firearm must be 30” or over and it must have a 16” or longer barrel.

But of course we all know if it’s illegal it’s physically impossible

Printing

Print with whatever settings work best for you, your printer, and your slicer. I will still give my recommendations with what works best from my testing.
Important to read through on how the frame is printed!

Frame

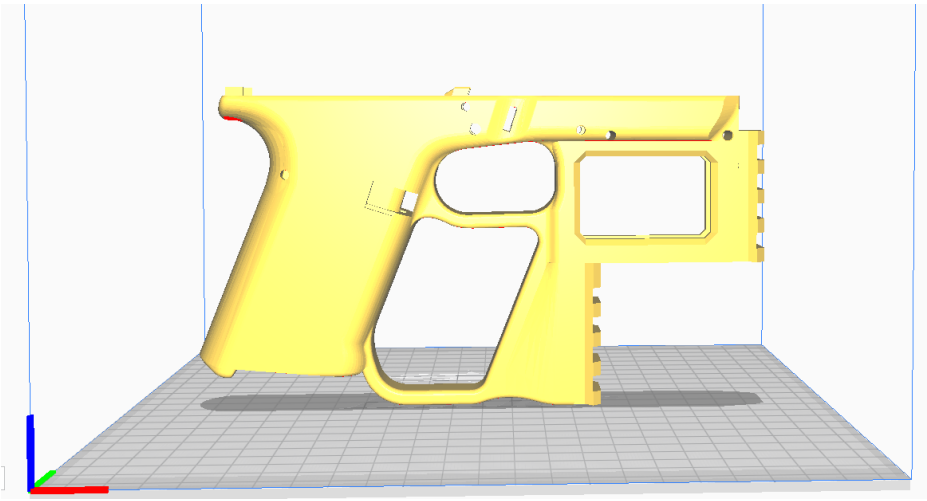
This print should be done after you have received your serial number and engraved all info onto the steel block.

This print is by far the most important to pay attention to and the hardest to set up. In order to be able to implant the steel block the print must be done on an FDM printer with the magwell facing down. Additionally, the cavity for the steel block must have all the support blocked off from that area.

Recommended settings:

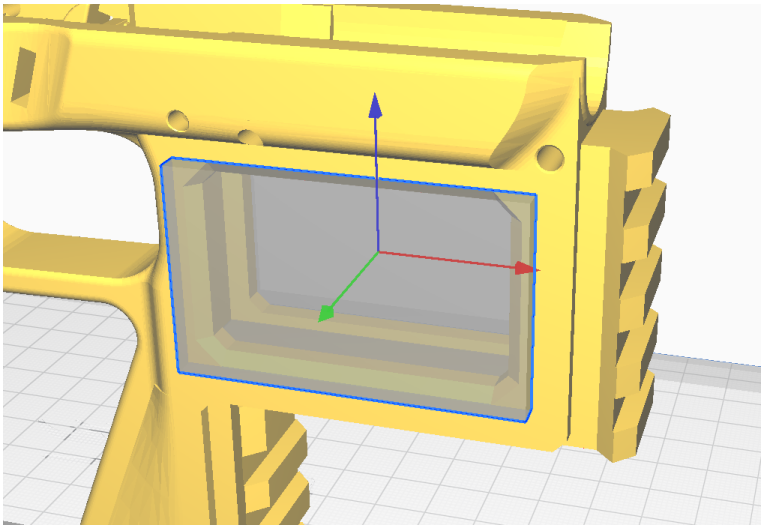
Wall Line Count: 5 or more
Infill: 30%
Infill Pattern: Cubic
Infill Line Multiplier: 2
Fan Speed: 70%
Support: Tree
Support Placement: Touching build plate
Enable Support Brim: Yes
Build Plate Adhesion Type: Brim

Orientation:



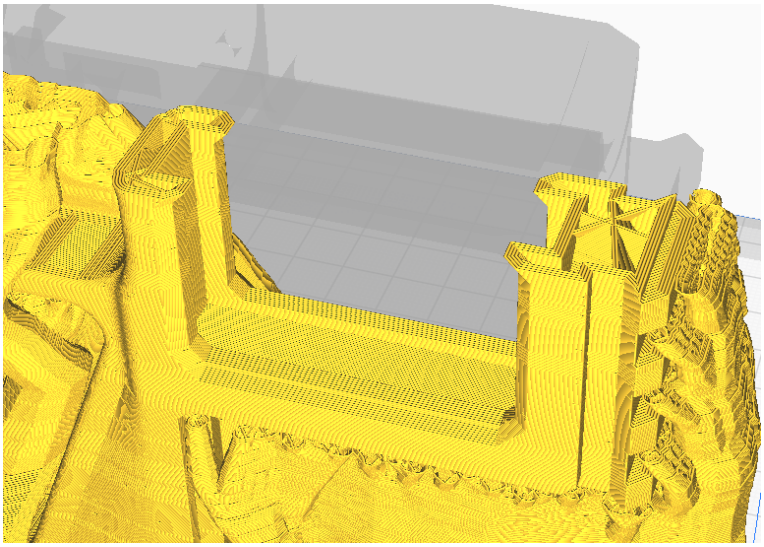
Support blocking:

Included in the files is an STL that will fit the cavity used for the steel block. If using cura, select the mesh type option “Don’t support overlaps”.



(Hint: if using cura and can’t lift the block off the build plate, go to Preferences > Configure Cura > Viewport behavior > Automatically drop models to the build plate, make sure to have this deselected)

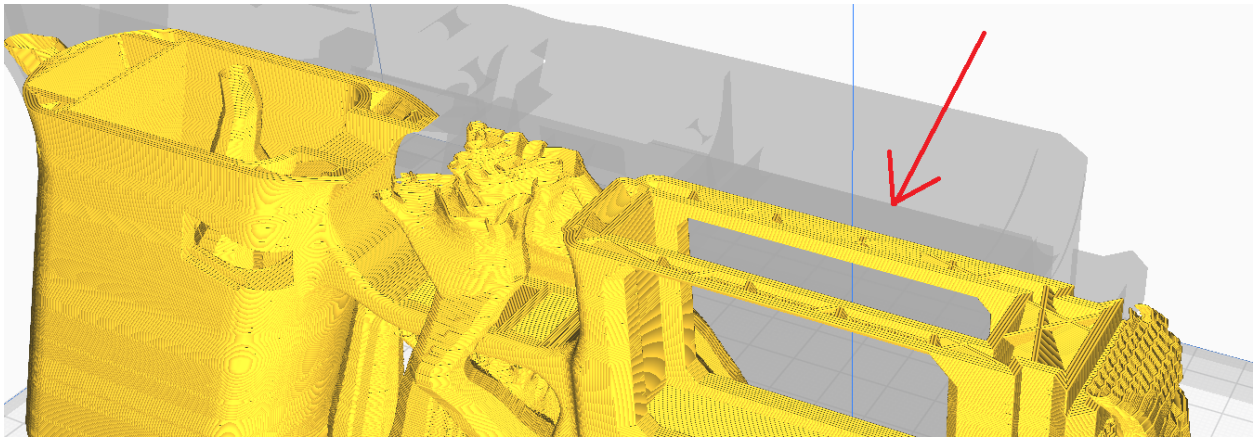
VERY IMPORTANT! Once sliced, preview the model to make sure there are NO supports in the block cavity.



Starting the print:

After you start your print, it is then important that you stick around for the second half of the print to make sure you don't miss when the print encloses the cavity.

Watch the print and wait for the 2 bridges to form, it's recommended to then drop in the steel block after 10 layer lines of the bridge have been placed down (assuming 0.2mm layer height). Make sure to look at your slicer and make a mental note of what features mark the time right before the cavity is closed.



Dropping the block in too early will cause the print head to strike the block and risks knocking the print off the build plate. Too late and the cavity will close before the insertion

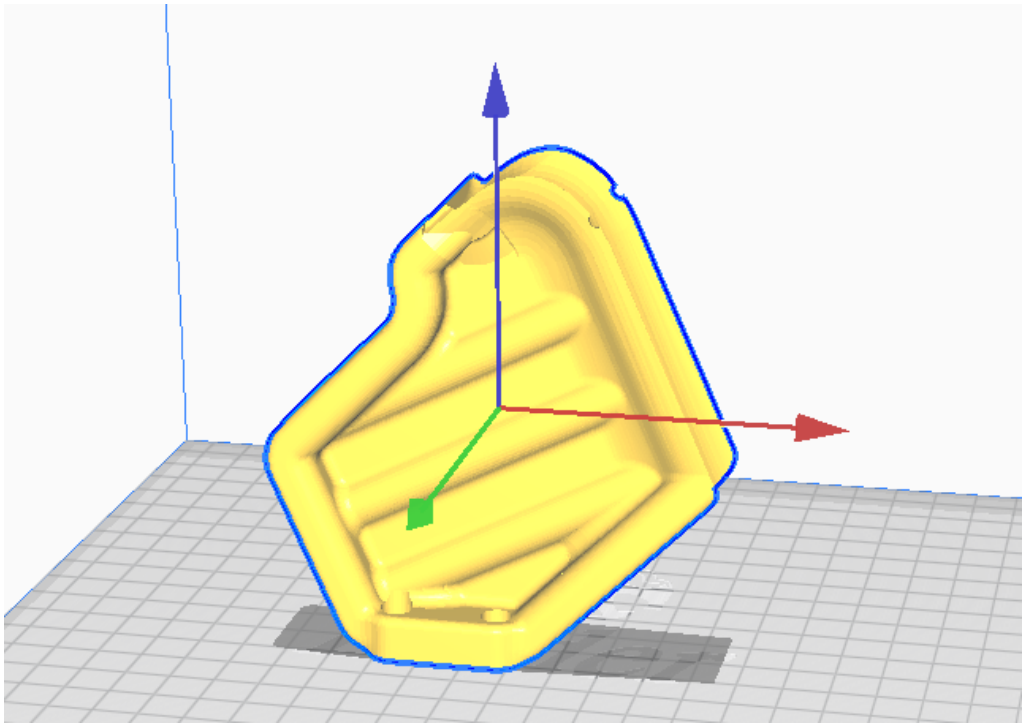
Fin Grip

Easy print, nothing special needed, no supports.

Recommended settings:

Wall Line Count: 5 or more
Infill: 30%
Infill Pattern: Cubic
Infill Line Multiplier: 2
Fan Speed: 60%
Support: None
Build Plate Adhesion Type: Brim

Orientation:



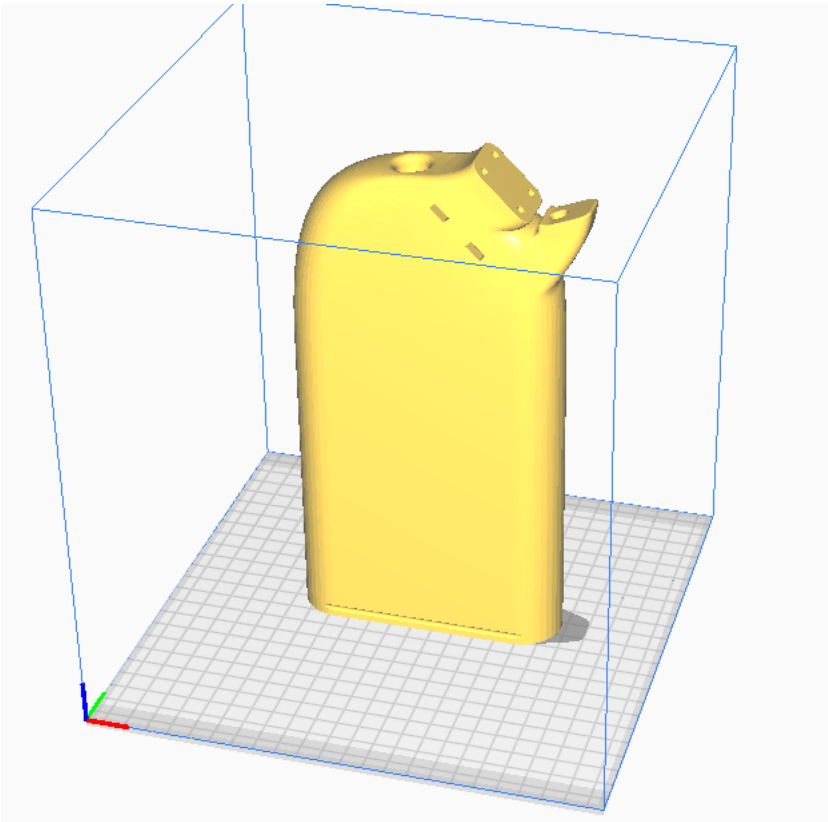
Stock

Biggest and longest print, almost reaches the build height limit for the Ender 3. Supports not recommended, as they would be a pain to remove and clean up from the inside.

Recommended settings:

Wall Line Count: 4 or more
Infill: 10%
Infill Pattern: Cubic
Infill Line Multiplier: 2
Fan Speed: 70%
Support: None
Build Plate Adhesion Type: Brim

Orientation:



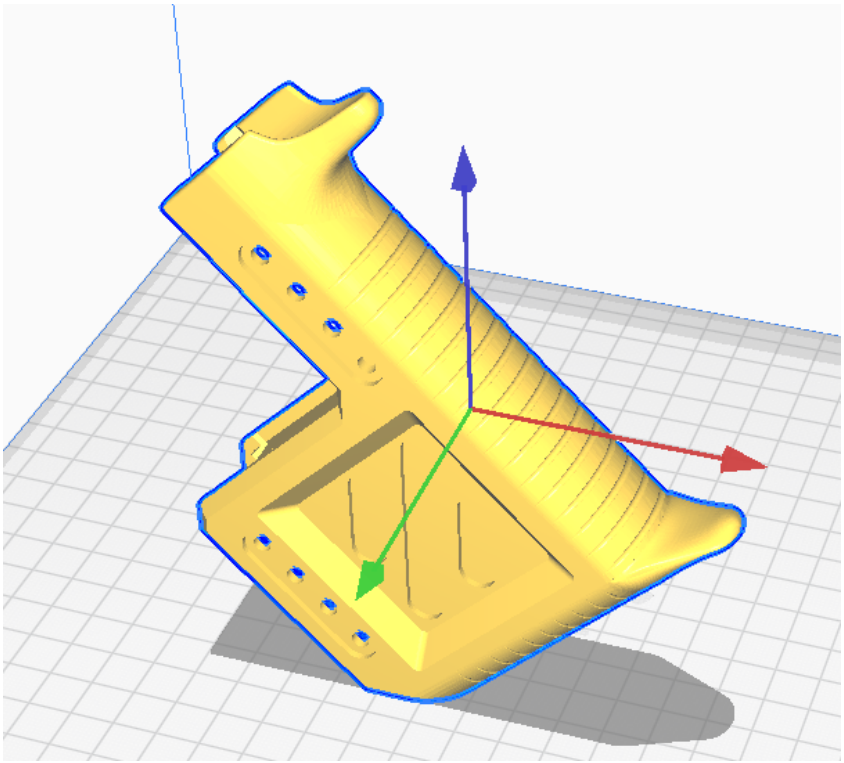
Front Grip

Also another easy print, nothing special on this one.

Recommended settings:

Wall line count: 4 or more
Infill: 20%
Infill Pattern: Cubic
Infill Line Multiplier: 2
Fan Speed: 60%
Support: None
Build Plate Adhesion Type: Brim

Orientation:



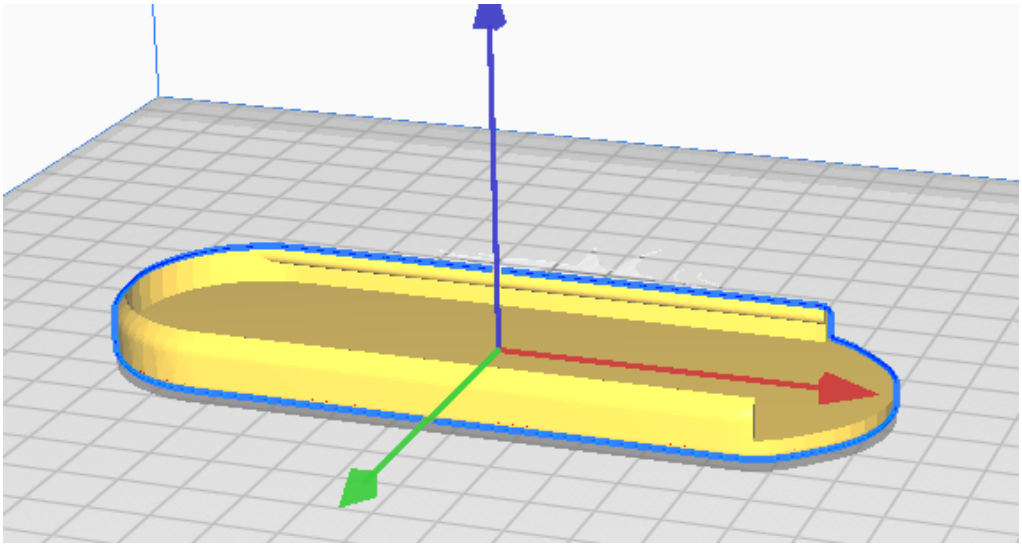
Buttplate

The shortest and smallest print, supports recommended.

Recommended settings:

Wall line count: 4 or more
Infill: 30%
Infill Pattern: Cubic
Infill Line Multiplier: 2
Fan Speed: 60%
Support: Regular
Build Plate Adhesion Type: None

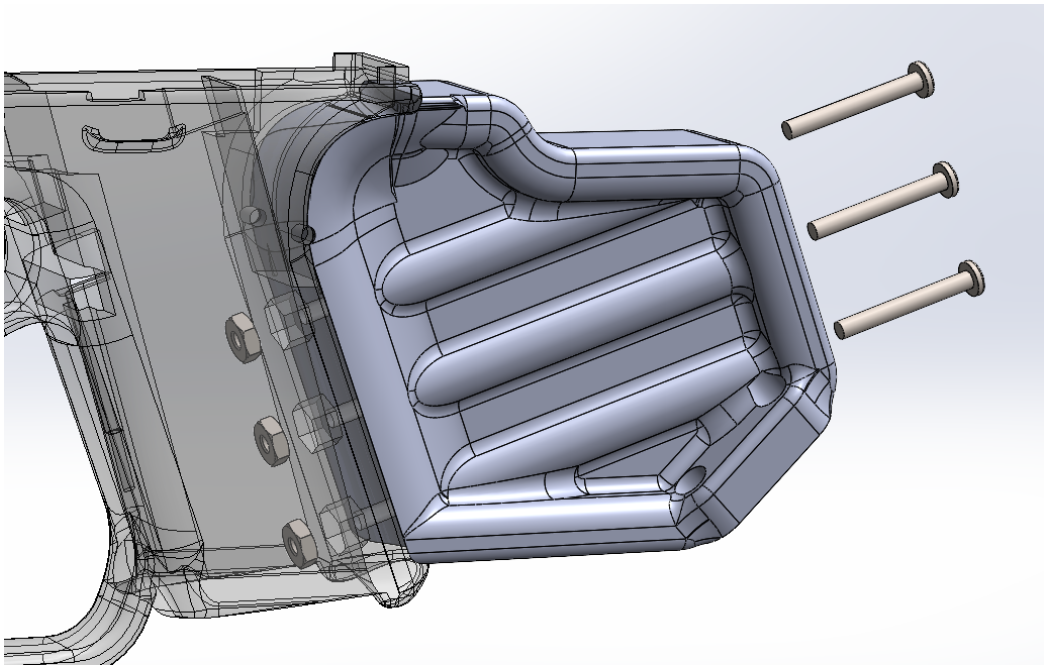
Orientation:



Assembly

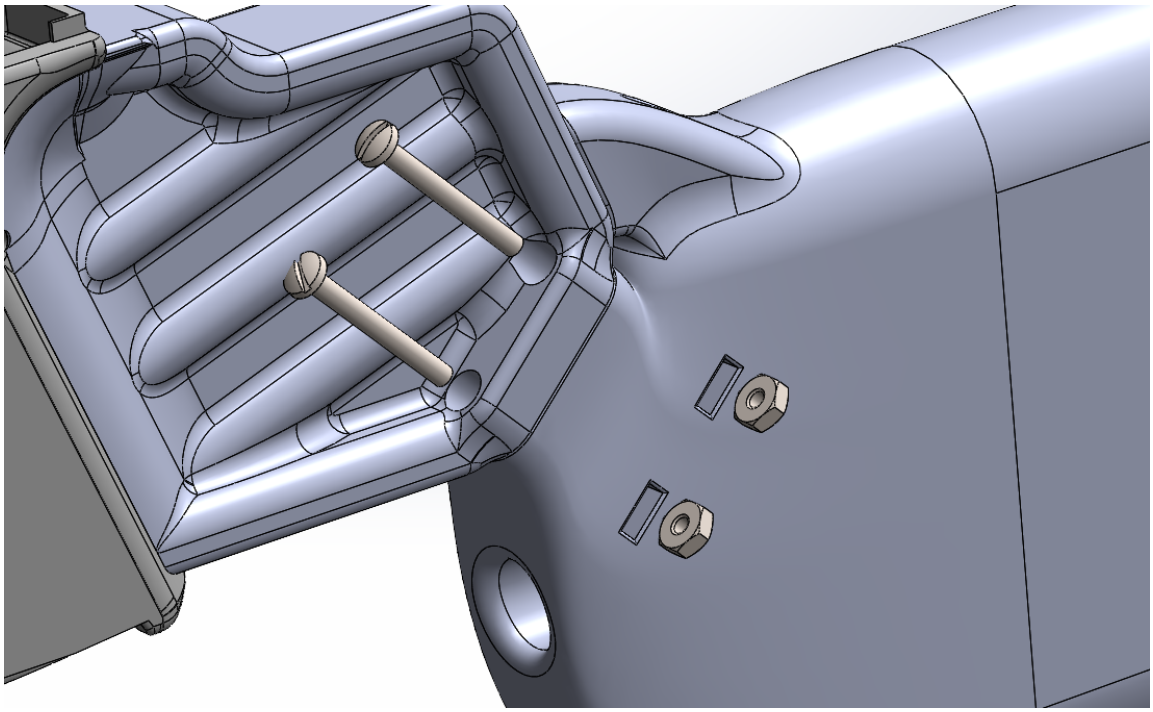
First follow the FMDA DD19.2 Assembly Tutorial to assemble the frame of the gun with the parts listed there.

After the frame assembly is complete, start with mounting the fin-grip to the frame with (3) 6-32 screws and nuts. The nuts have cutouts that allow them to sit flush with the magazine hole. This is where that screwdriver with a long slender shank is needed. Insert the screws and check that they all bind with the nuts (they should self cut threads in the plastic and have slight resistance when screwed in).

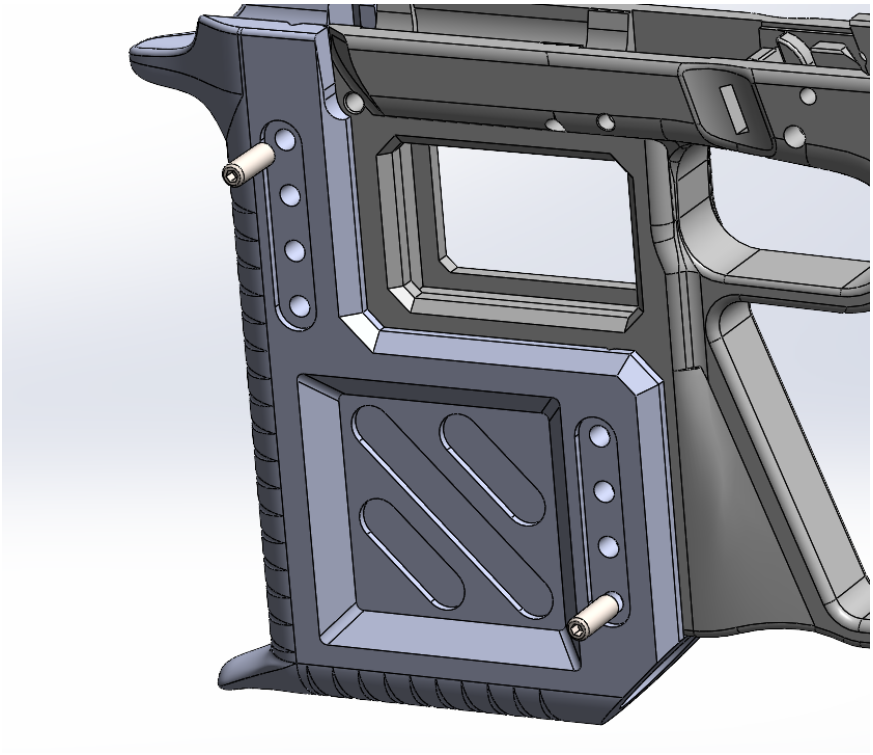


This is also where you will need to use those screw cutters. Each screw should be cut to slightly different lengths. As seen in the image above, the very top screw should be cut to 18mm, middle 19mm, bottom 20mm (bottom of head to the end of the screw). Insert the screws and check the fitting with a standard Glock magazine. If blockage occurs, cut the screw down by 1mm and check the fitting again. Repeat until no blockage.

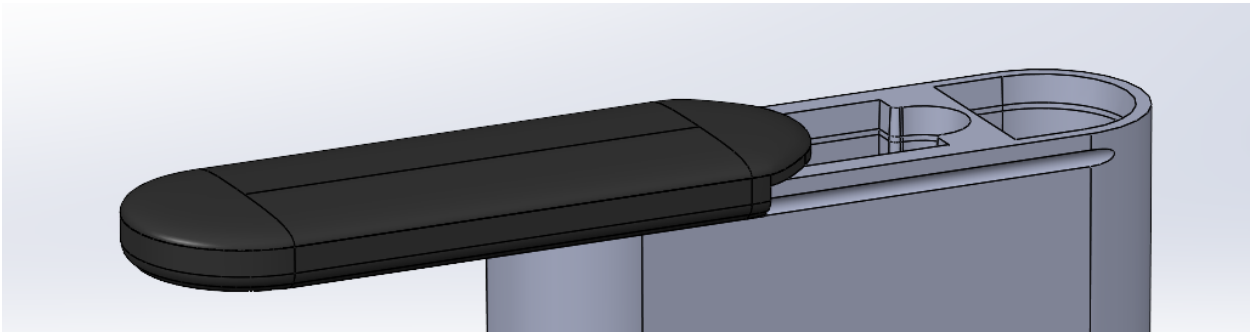
Next get the rest (4) 6-32 screws and nuts to attach the stock. Insert the nuts into the slots of the stock. Then start threading the screws into the fin-grip and leave the screws sticking out a little bit from the bottom of the fin-grip (to help align the stock). They should be tough to screw in with the fin-grip ridges getting in the way. Align the stock with the fin-grip and tighten the screws down the rest of the way.



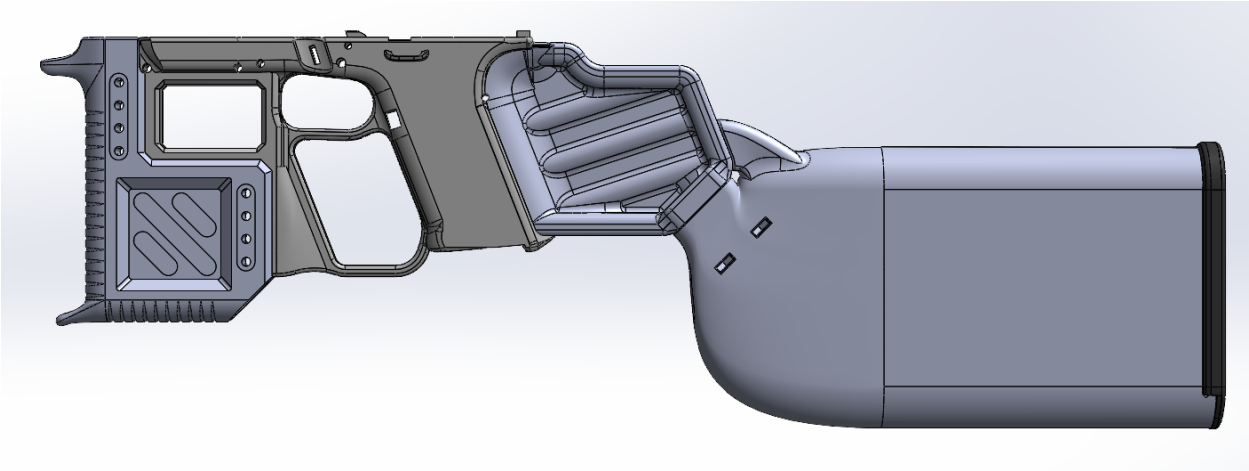
Now use the set screws to attach the front grip to the frame. Slide the grip onto the pic rails, and thread in the set screws into any of the holes. Using the (4) 1/2” set screws, screw them in until they are just past flush with the indented surface and repeat on the other side. If (2) 1” set screws are available to you, you may use those instead, thread the same way and center them as best as possible.



The final part, the buttplate, simply slides on the end of the stock.



Final Overview



The final assembly without the upper should look like this.

Features:

- When completely assembled with the upper and 16” barrel, the OAL should come out to 30.5”
- Stock holds a standard menendez magazine
- Stock holds an OEM Glock upper assembly, with the barrel sliding into the hole of the front grip
- Additional slot in stock for other accessories
- Cheek weld works well for typical iron sights
- Two holes on the front of the frame just below the slide for extra attachments, sized for 6-32 screws and are 40mm appart (Add your custom 3D printed attachments here if you’d like)

Included will be a few spare add-on prints

Additional prints:

- Triple pic rail mount (requires heat gun to be bent into shape, utilizes the (2) 6-32 holes)
- Thread protector (ZFI 16” barrel comes with threads)
- Dust cover