

PPX4 Assembly Guide

The Printable Beretta PX4 Storm Frame

Guide Revision 9

2023-08-7

jmanjones



Table of Contents

Table of Contents	1
FAQ	2
Parts	3
Parts List	3
Not needed:	4
Compact Block Adapter	4
Sourcing	4
Compatibility and Versions	5
Printing	5
Support Placement	5
Tools	8
Assembly	9
Safety first	9
Preparation	10
Drilling	10
Assembly	12



FAQ

Q: Does this use metal rails/Do I need to buy rails?

A: No, it uses printed rails that have been proven to be quite durable.

So far I have over 500 rounds of .45 ACP through one of my frames with no significant wear to the rails/frame. The way the action of the PX4 works, the forces experienced by the rails are quite low (compared to Glocks for instance).

Q: What parts kits/models are supported?

A:

- Full size 9mm
- Full size .40 S&W
- Full size .45
- Special Duty .45
- Compact 9mm
- Compact .40 S&W

Q: What parts kits/models are not supported?

A:

- Subcompact 9mm
- Subcompact .40 S&W

The subcompact features a tilting barrel action instead of the rotating barrel + cam, most likely because the bullet's effect on the shorter barrel wouldn't be enough to unlock the action. As a result of the tilting barrel, the subcompact frame needs a metal locking block and most likely metal rails (due to the geometry forcing them to be quite thin).

Q: My kit doesn't have a disassembly latch and they're expensive/unavailable online. What do??

A: I've included a .dxf and machinists drawings so you can have one laser cut out of steel/stainless or fabricate it yourself. See the readme in the folder.

Q: My compact doesn't cycle properly/doesn't feed the next round. What's wrong?

A: This seems to be a common issue, especially with earlier 9mm compact models. Using higher power ammunition will do the trick. I had great results with 124gr +P 9mm or 9mm NATO.

Q: The trigger guard is hard to print. Help?

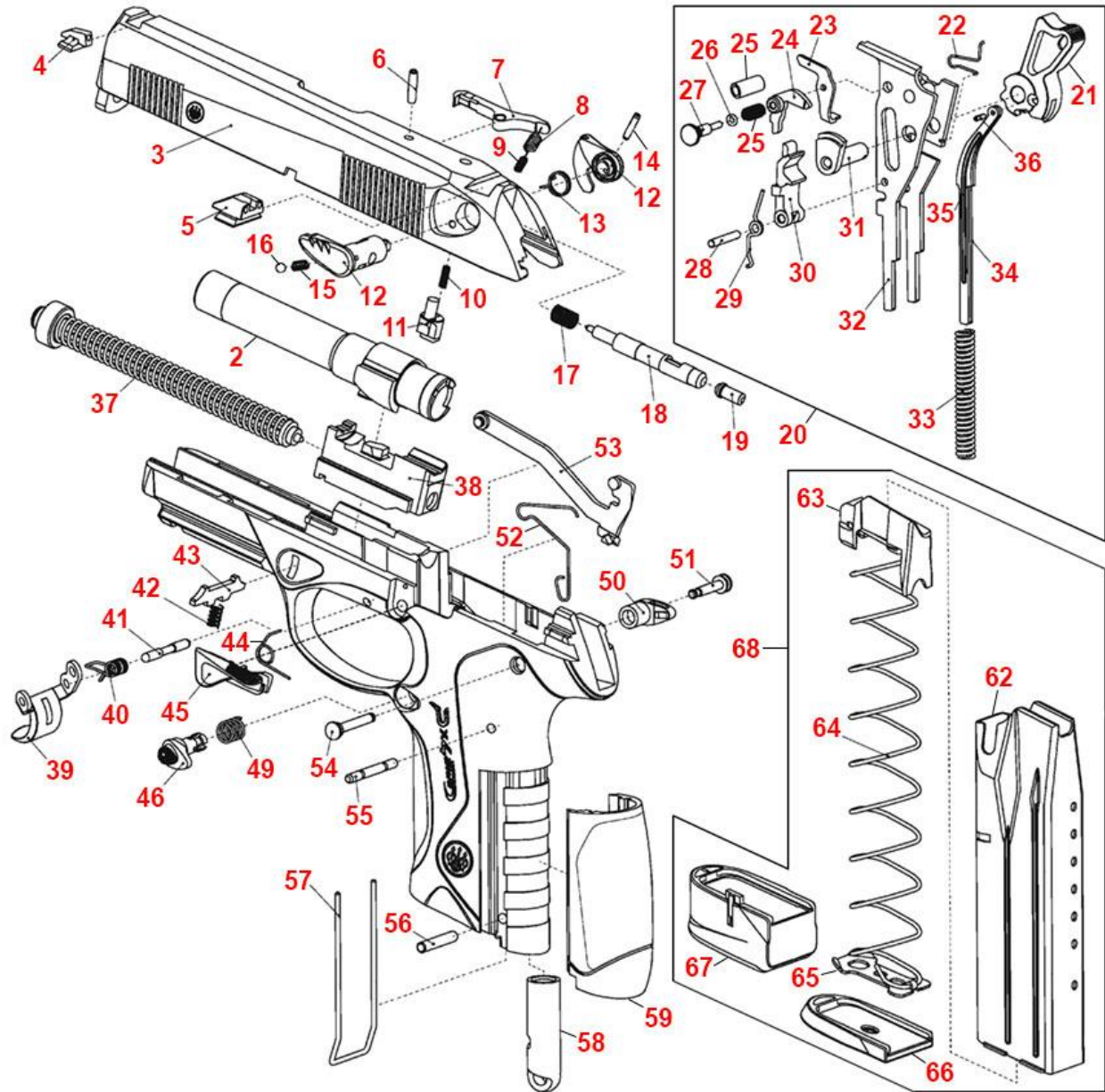
A: This will depend on your cooling setup/bridging settings. You can try finding some advice online or printing at a more extreme angle (front of frame up more) to reduce the overhang angle at the bottom.

Q: Grip is slippery. No stipple? 🙄

A: I've got a handful of mods planned, including grip texturing, that will be released in an update soon. In the meantime, try grip tape or a soldering iron.

Parts

Parts List



You will need the following:

- Complete Slide assembly (#3-16)
- Barrel (#2)
- Central Block/Locking Block (#38)
- Recoil Spring assembly (#37)
- Complete Hammer assembly (#21-36)
- Other small parts (#39-46, 49-56, 58*)

Not needed:

- Back strap retaining spring (#57)
- Back strap (#59)
- Hammer Spring Cap (#58)*

*Can use printed or factory part

Disassembly latch spring can be substituted with a suitable pen spring if missing.

Compact Block Adapter



The compact models feature an extra part called the “block adapter” which attaches to the locking block. It’s a good way to quickly identify whether a parts kit is for a compact, as the slide is only about 15mm shorter than the full size and can be difficult to differentiate due to lack of markings.

Sourcing

Here are some good places to find parts/kits:

- <https://www.beretta.com/en-us/gun-accessories/handguns/kits-parts/#gunfam=Px4-Series&mpp=72>
- <https://everygunpart.com/catalogsearch/result/index/?manufacturer=8&q=px4>
- <https://www.midwestgunworks.com/beretta-px4/parts.html>
- <https://www.gunbroker.com/>
- <https://www.ebay.com/>

Compatibility and Versions

This project currently targets the full size and compact 9mm/.40SW parts as well as .45ACP standard and Special Duty (SD) parts. The subcompact is not supported in this release.

The naming convention for frame files is: PX4_caliber_upper_magazineSize_revision.file [Caliber is 9/40 or 45, upper is FS (full size), C (compact), or SC (subcompact), magazine size is FS/C/SC/92]

For instance, the “standard” full size 9mm/.40 S&W frame would be:

```
PX4_940_FS_FSMag_v99.stl
```

The 92 magwell version accepts full size Beretta 92-series magazines without any other modifications or parts. However, due to the location of the mag catch slot, the magazine catch on the frame is located farther down, increasing the trigger guard size and reducing the area of the grip slightly.

Printing

Make sure your printer is properly calibrated and your prints have proper layer adhesion before printing this frame.

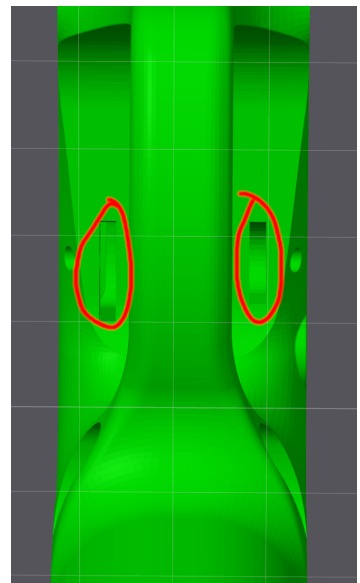
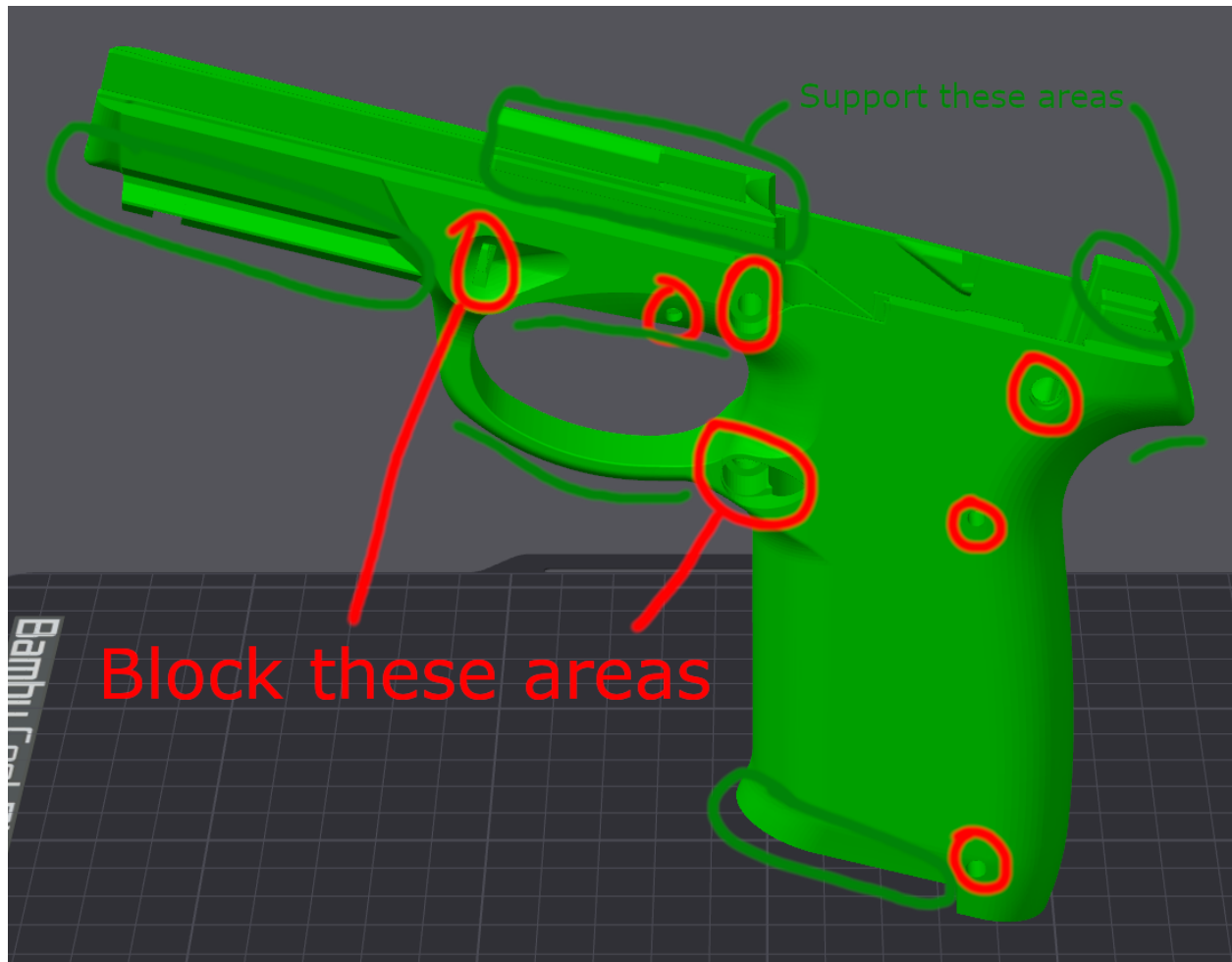
- PLA+ recommended
- Print at 100% infill with at least 6 walls
- 0.2mm layer height (or smaller)
- 0.4mm nozzle is recommended, as there are some thin features
- 15° nose up (stl preoriented, recommended), or 0° (bottom of magwell planar with bed)

At the recommended printing angle, the largest frame is about 187mm long, 30mm wide, and 156mm tall. This should fit on most printers out there.

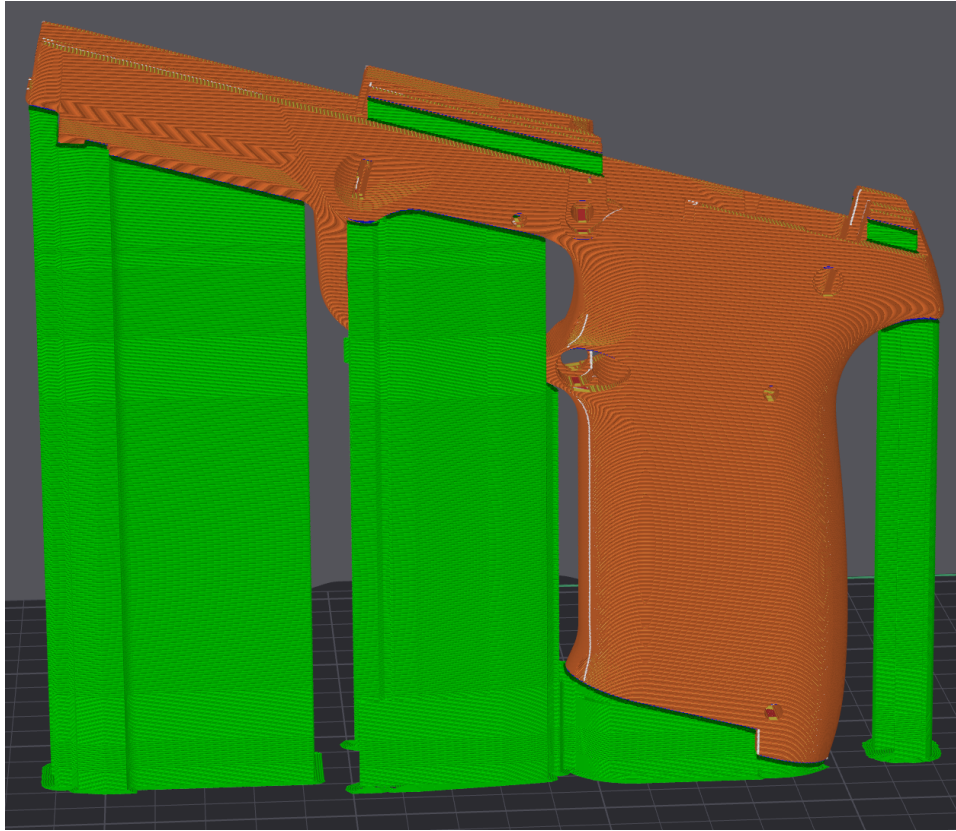
Support Placement

The following is my recommendation and it works well enough for me, but if you disagree or know your printer well, feel free to do your own thing.

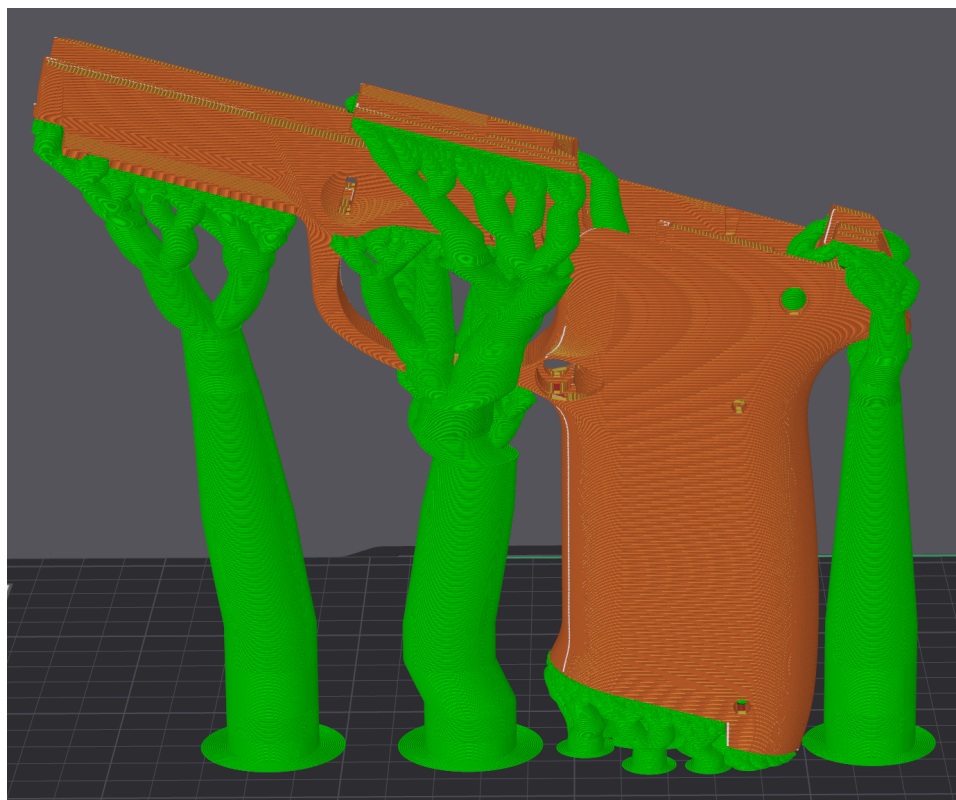
Supporting the rails is important as it will help prevent droop/warp and will ensure the full surface area will contact the slide. I typically avoid supporting the mag catch area, but you may find it necessary. You will also want to avoid excessive supports around the trigger area, as it will be a pain to remove without damaging the thin area to the right of the trigger bar.



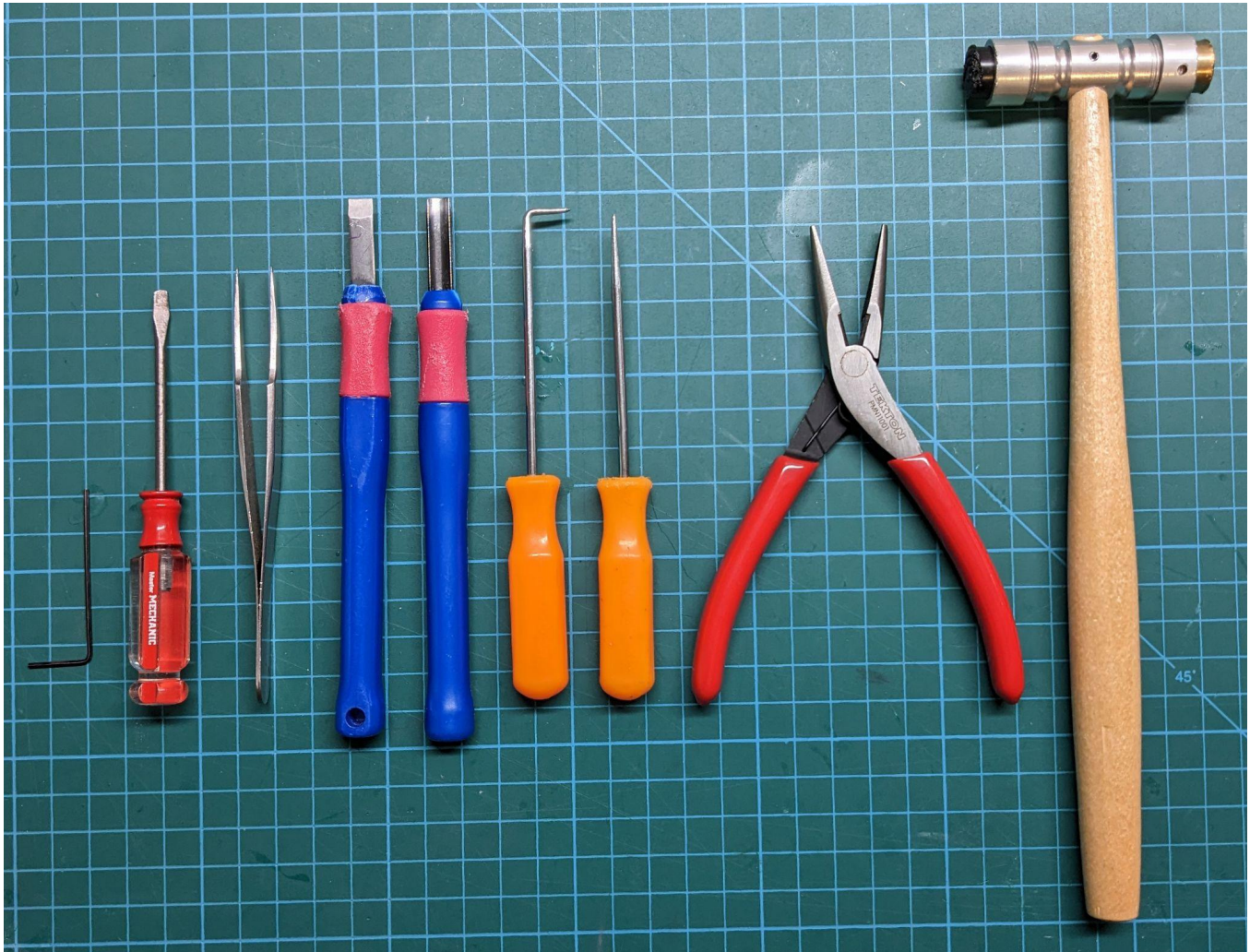
Your supports should look something like this:



Or this:



Tools



The following tools are recommended for support removal/cleanup/assembly/disassembly:

- Needle nose pliers (general support removal)
- O-ring picks (general support removal)
- Flat/round small chisels (general support removal/cleanup)
- Tweezers (manipulating small parts)
- Soft face hammer (tap in frame pin, tap out trigger pin)
- 3/32" or similar pin punch (tap out trigger pin)
- Flathead screwdriver (remove frame pin)
- Small allen key or small piece of metal (to depress disassembly latch spring)

Assembly

Safety first

Putting a gun together is no joke. Firearms are dangerous tools that must be treated with care and respect. **You are responsible for your safety, and those surrounding you** when you work with or operate firearms. Fellow developers or engineers cannot be responsible or liable for what you do or don't do.

As a general reminder, here are some rules to keep in mind:

1. **Always treat a gun as if it is loaded.** Remove the magazine and check the chamber yourself to verify the gun is unloaded.
2. **Keep your firearm always pointed in a safe direction.** Never point your gun at anything you don't intend to destroy.
3. **Be aware of what is in front and behind of your target.**

But specifically, for working on your firearm, you should remember the following too:

1. **Keep live ammo away.** Use snap caps or dummy rounds to verify function of your firearm. Never keep live ammo around your workspace, and certainly never mix them with your dummy ammo.
2. **A clean gun is a safe gun.** Never leave your firearms uncared for to foul or dirty up. Debris can cause malfunctions, which can be dangerous.
3. **Always read and follow directions.** Don't ignore a warning or follow instructions out of order.
4. **Use prudent judgment.** If something doesn't add up- use common sense. Stop, inspect, and re-evaluate your previous actions and procedures.

Preparation

Remove supports and clean up any droop from the top of the magazine catch hole. The assembled magazine catch should move back and forth without any resistance, and magazines should drop free. The fit on the rails is designed to be perfect without fitting, but minor filing on the bottom or sides of the rails may be required. If your rails are too far out of spec, the decocker may not function reliably.

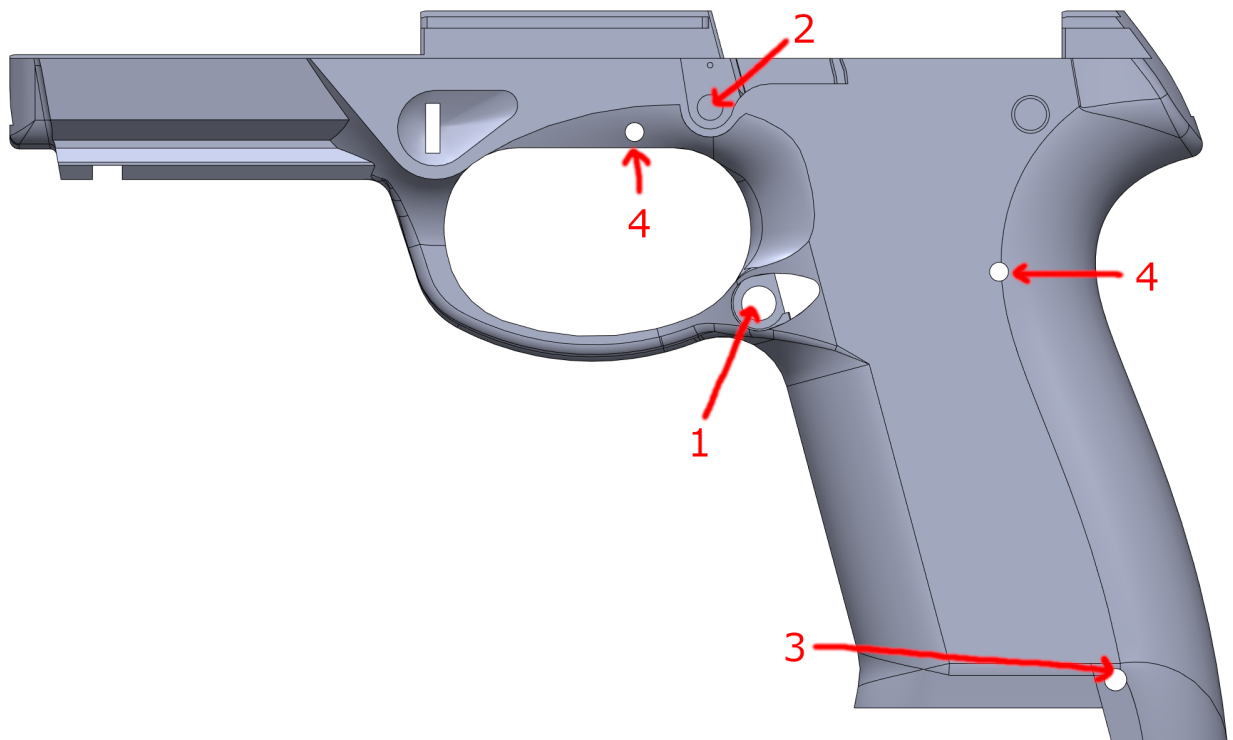
The assembly of the PPX4 will be essentially the same as a Beretta frame, so existing resources will be helpful if you experience any assembly issues.

Drilling

For the following holes, only #1 and #2 feature movement, so the others can be tighter fits as desired. Take care not to crack the frame if anything is too tight.

Drill/ream suggestions:

1. #2 bit (0.221"/5.6134mm)
2. #20 bit (0.161"/4.0894mm)
3. #26 bit (0.147"/3.7338mm)
4. #31 bit (0.120"/3.048mm)

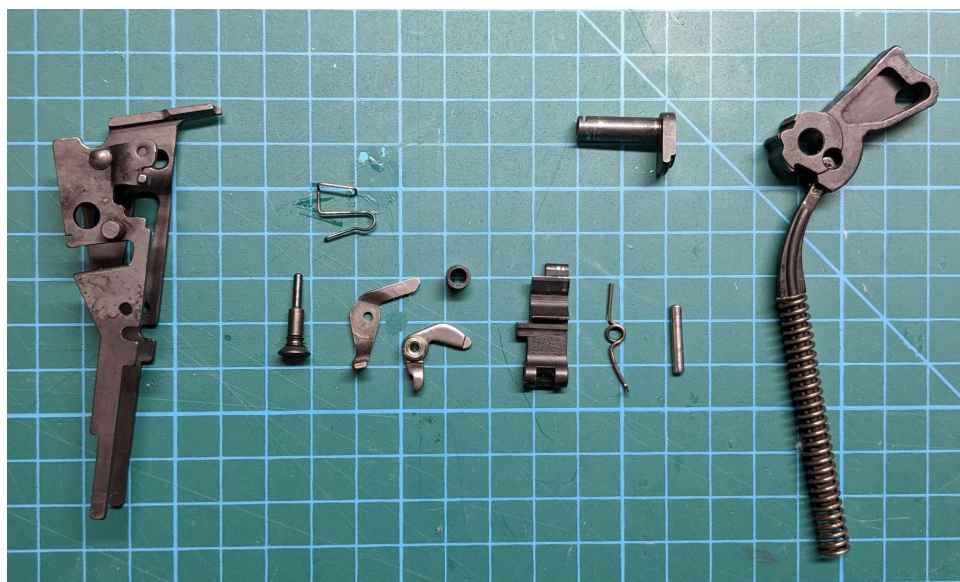


The following pictures show assembly of a full size 9mm kit (with 92-style “92FS R.P.” decocking levers), but all variants will assemble the same way.

Make sure you have all the parts on hand:

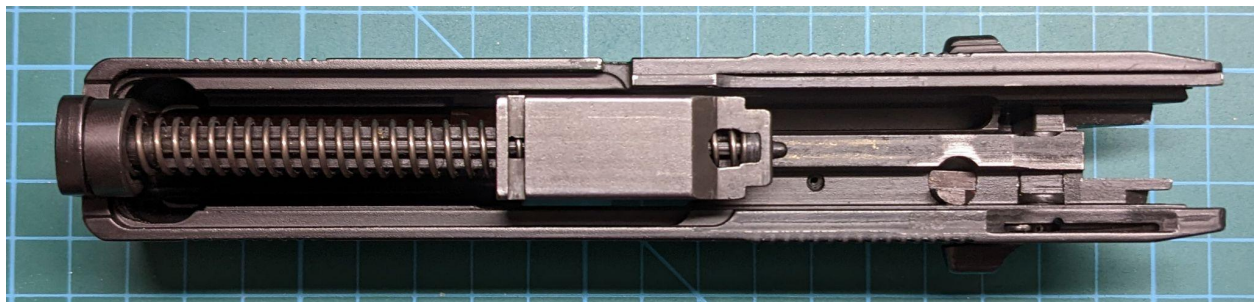


Hammer unit parts:



Assembly

- ☐ Slide assembly
 - ☐ Drop the tip of the barrel in the complete slide, slide forward, and drop down, leaving the cam slot facing you
 - ☐ Put the small end of the recoil spring assembly in the locking block
 - ☐ Put the large end of the recoil spring in the slide and drop the locking block on top of the barrel, with the cam facing the slot in the barrel



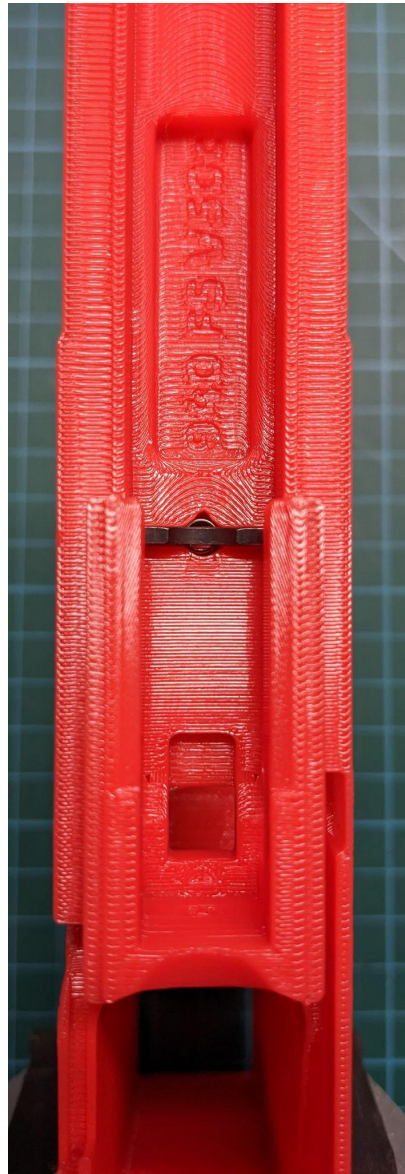
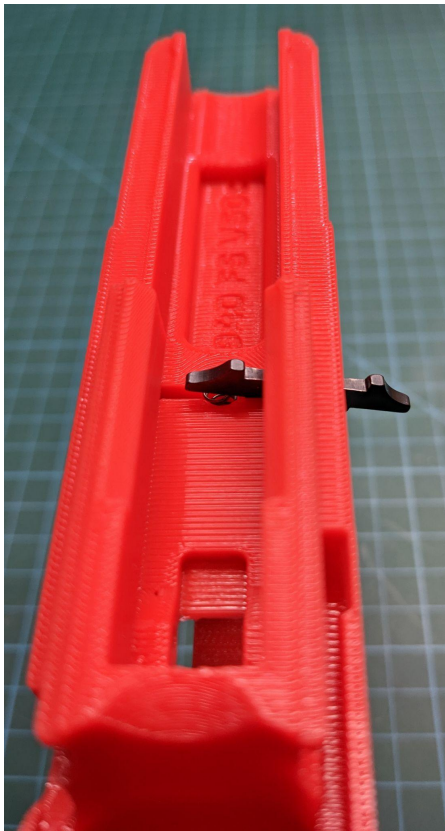
☐ Hammer unit assembly

- ☐ Clip the hammer pin retaining spring over the pin on the right side of the hammer unit body
- ☐ Partially insert the lever assembly pin into the top hole of the hammer unit body from the left side
- ☐ Insert the spacer, hammer release lever (shiny side towards spacer), and firing pin catch lever (long bent side facing away from spacer)
- ☐ Push the lever assembly pin all the way in to the hammer unit body (the pin should 'lock' in place due to its rubber o-ring)
- ☐ Put the hammer, hammer strut, hammer strut pin, and hammer spring together
- ☐ Align the hammer assembly in the hammer unit
- ☐ Put the hammer pin through the left side. Move the hammer pin retaining spring down and let it sit in the groove in the hammer pin. The tab on the pin should point up.
- ☐ Place the sear inside the hammer unit and partially insert the sear pin from the left side
- ☐ Place the straight end of the sear spring on the notch of the sear and line up the hole with the sear pin
- ☐ Push down on the sear spring and push the sear pin through it, flush in the hammer unit



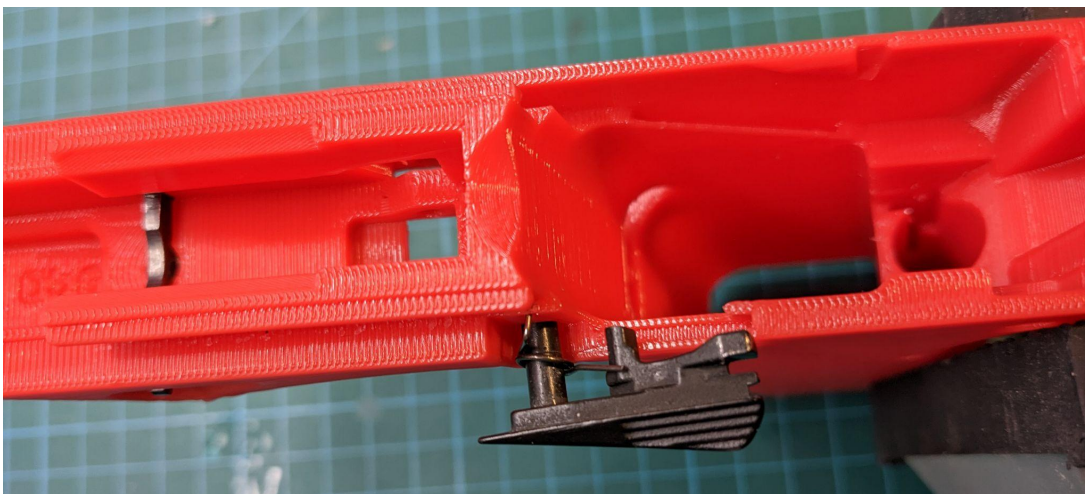


- ☐ Disassembly latch
 - ☐ Insert disassembly spring into recess
 - ☐ Insert disassembly latch at an upwards angle, using it to push the spring down and to the center until the latch is centered in the frame and captive



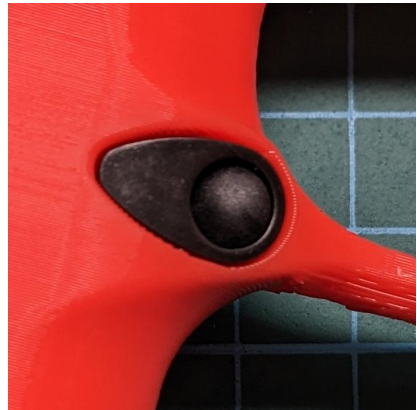
☐ Slide catch

- ☐ Insert spring partially into the small hole
- ☐ Insert the slide catch with the long end of the spring on the top nub
- ☐ Tilt the slide catch up while pushing in to seat it
- ☐ Make sure the other end of the spring is fully inserted into the frame
- ☐ This should move without resistance



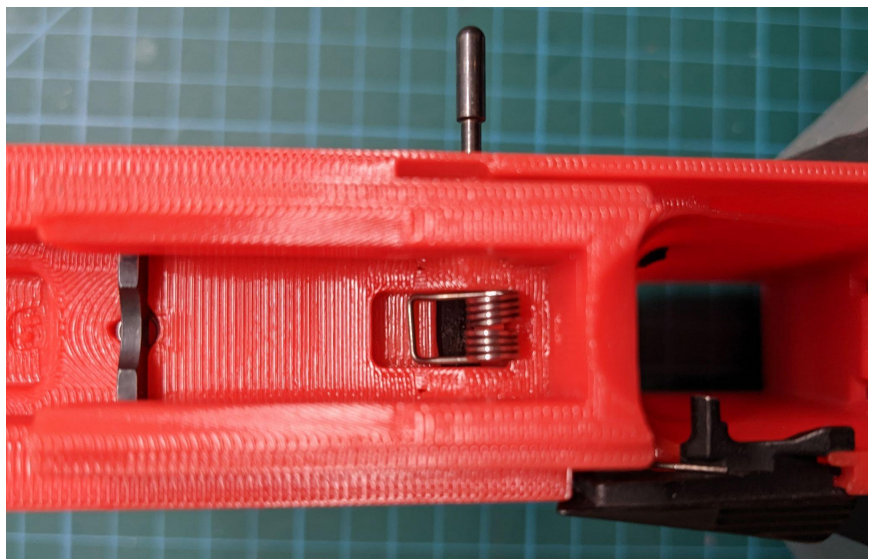
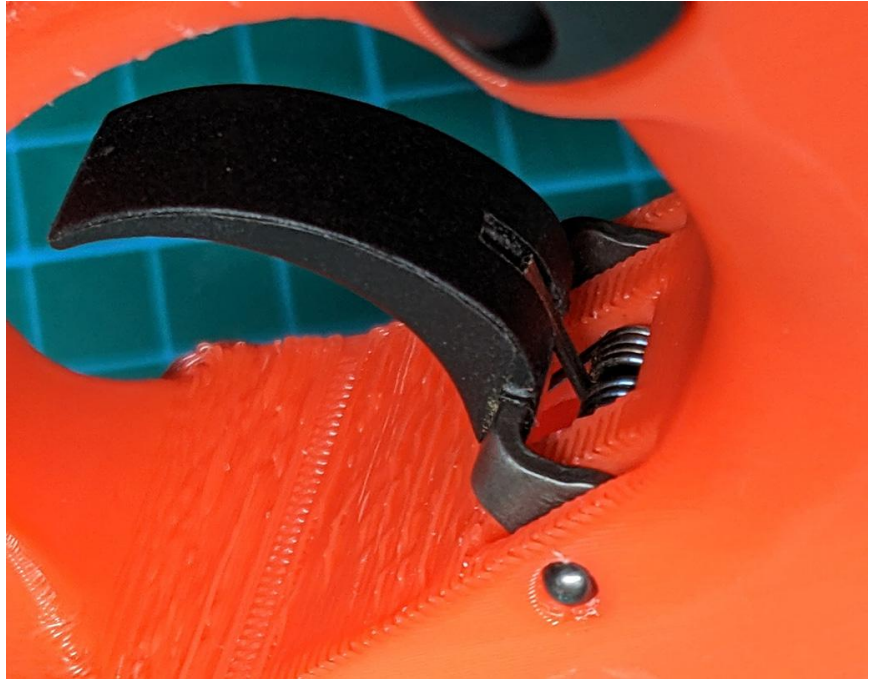
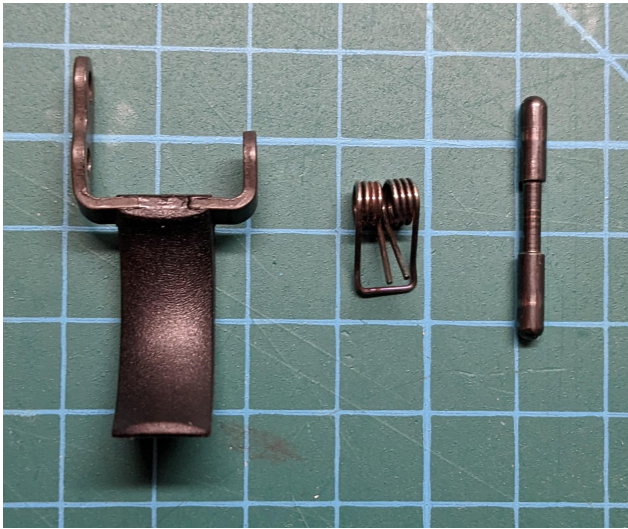
☐ Magazine catch

- ☐ Put magazine release spring on magazine release button and insert into desired side of frame
- ☐ Snap the magazine release button support on the stem of the magazine release button from the other side
- ☐ Insert the magazine release button pin through the support



☐ Trigger

- ☐ Insert the trigger into the frame
- ☐ Insert the trigger pin partially
- ☐ Place the trigger spring into the recess such that the two prongs are pointing downwards
- ☐ Push the spring down while fully installing the pin

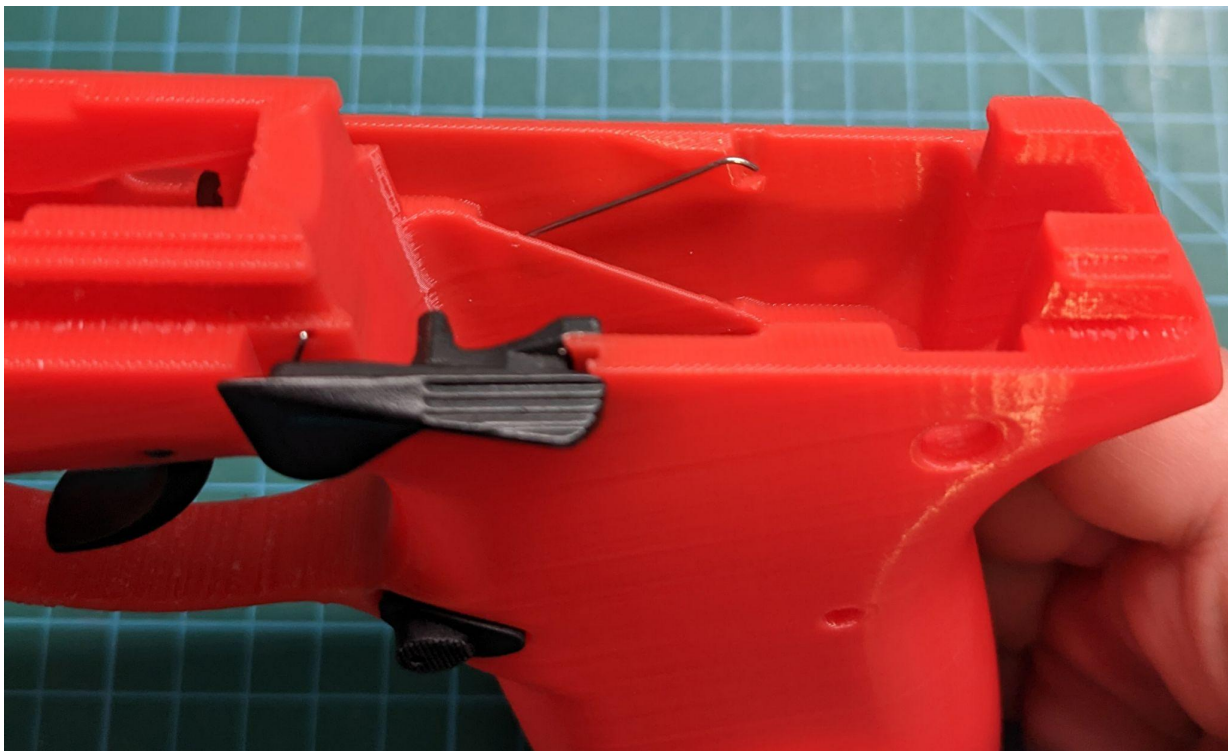


At this point, make sure that you encounter no resistance when pulling the trigger. Make sure the area above the arm of the trigger is free from supports or droop. There should be a gap above it as shown.

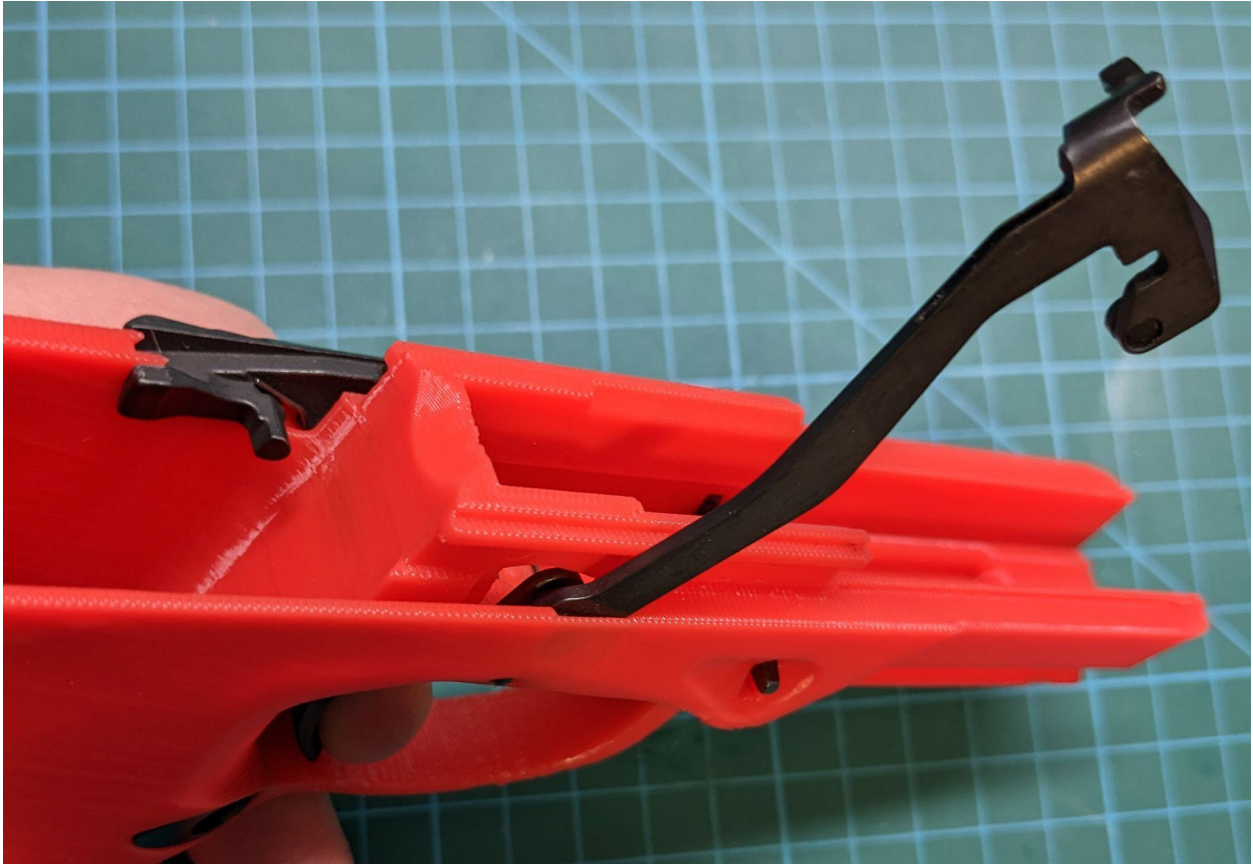


☐ Trigger bar spring

☐ Insert the trigger bar spring into the recess as shown



- ☐ Trigger bar
 - ☐ Pull the trigger and insert the trigger bar nub into the arm of the trigger



- ☐ Hammer assembly
 - ☐ Hold the trigger bar together with the hammer assembly while inserting into the frame
 - ☐ Make sure the trigger bar spring is in the channel on the bottom of the trigger bar
 - ☐ Insert the frame pin
 - ☐ Insert the lower hammer unit retaining pin - **don't hammer it**, use a tool to lift the bottom leg of the sear spring while gently tapping it in to avoid bending it. It should click into place when fully inserted.
 - ☐ Insert the hammer spring cap and hammer spring cap pin



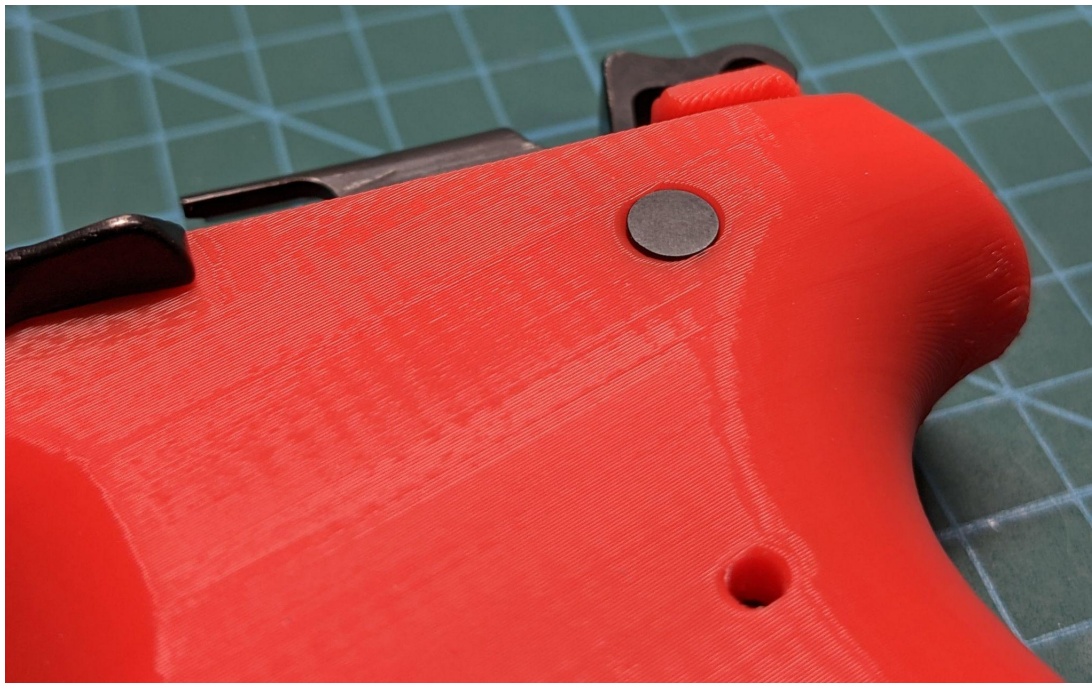
When inserting the hammer unit assembly, make sure that the trigger bar spring rides in the ridge cut in the underside of the trigger bar.



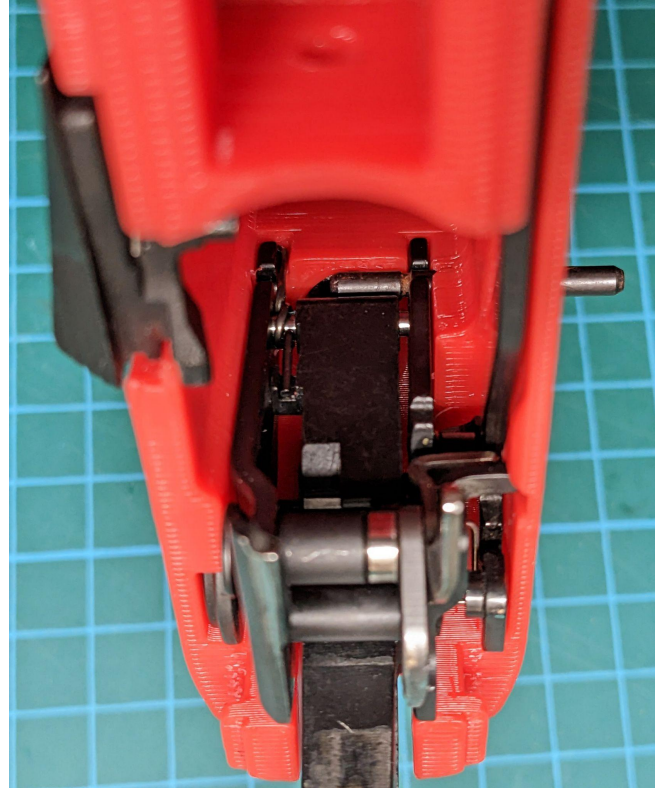
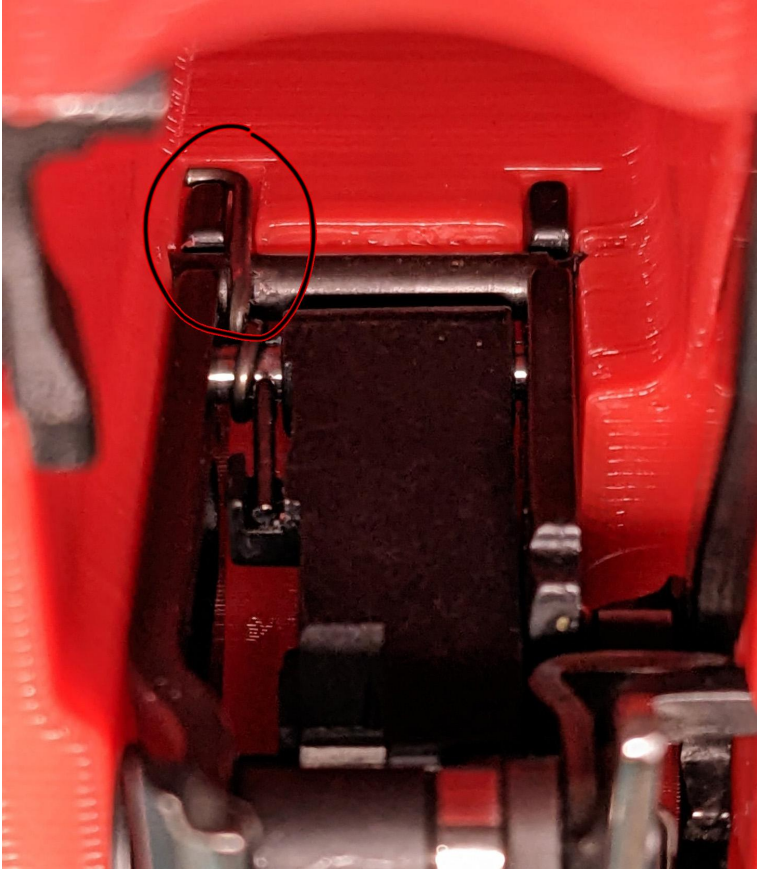
When the hammer unit assembly is fully inserted, the frame pin and lower retaining pin holes should line up with the corresponding holes in the frame. It should be a snug fit, but if it takes too much pressure, you may need to recalibrate your extrusion multiplier (or grab a needle file).

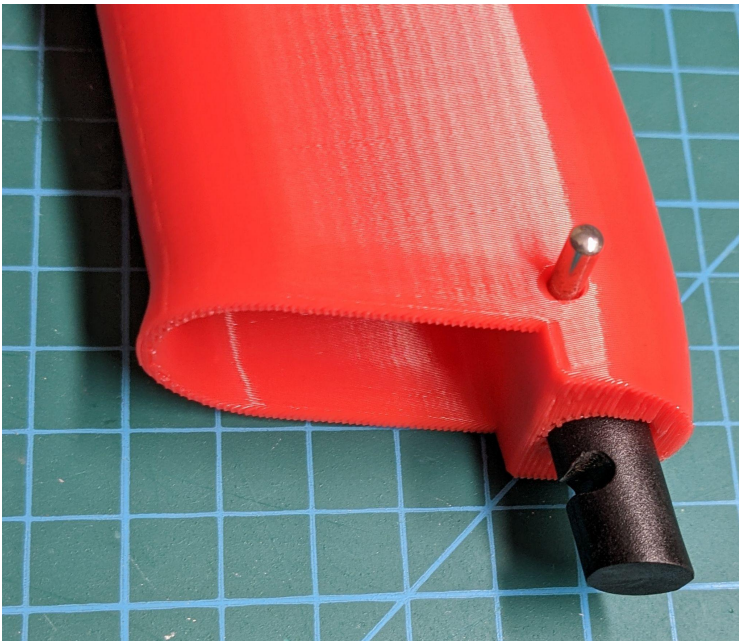
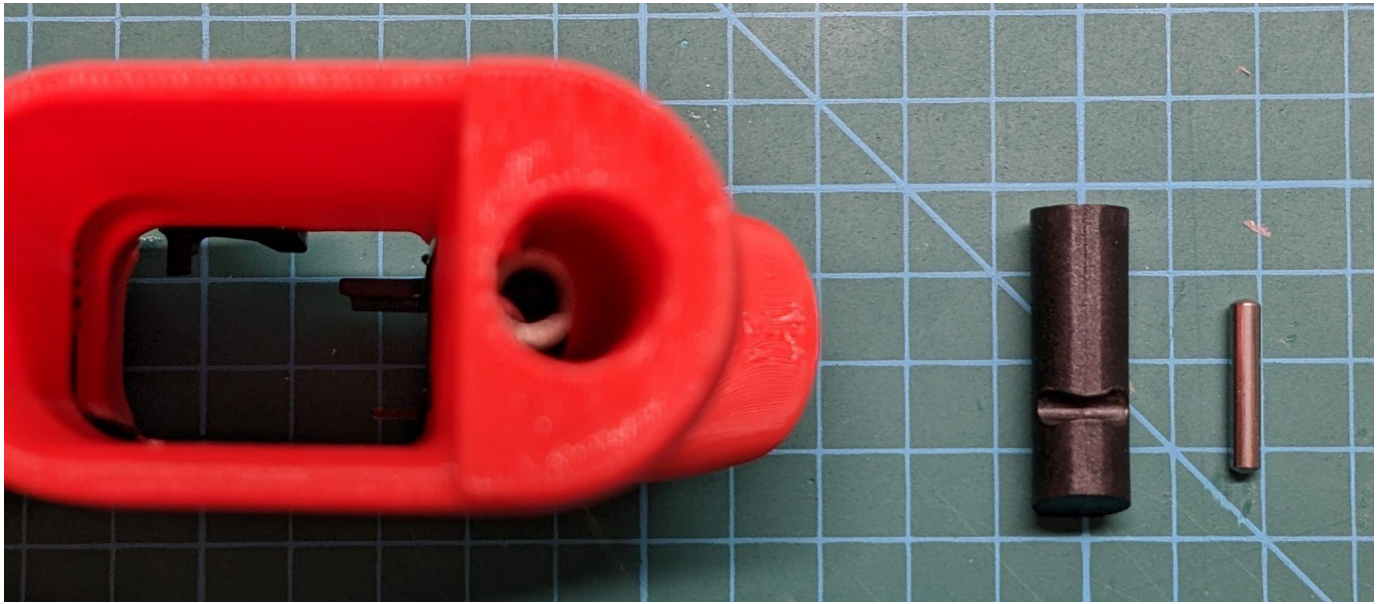


The cut on the end of the frame pin will be captured by the hammer pin retaining spring. You may need to give it a tap with a hammer to seat it fully. The head of the pin should lay flush with the grip.



Lift the circled part of the sear spring when inserting the lower hammer unit pin to avoid bending it. I use an o-ring pick through the left side.









Now take your entire slide assembly and slide it onto your frame. The disassembly latch should click into the locking block.

Now ensure a live round has not made its way into the chamber and perform a full function check, ensuring the following is functional before firing:

- Disassembly latch
- Half cock/Full cock
- DA and SA trigger release
- Trigger reset
- Decocker
- Magazine catch
- Slide stop

If everything is working, you should be good to go!

If you have any issues, concerns, or feedback, send me a message on DD RocketChat @jmanjones.

