SOUNDSHOCK NEOS

Version 1.0.3
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By: SoundShock

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SECTION 1: INTRODUCTION

This project took about 5 years to finish. No good reason other than having ADHD preventing me from being able to focus enough to finish it. I finally got around to taking all the photos and writing up this document so that I can finally put this behind me.

I’m gonna make this very clear, I don’t actually like this gun. I decided to make this printable frame as a way to turn parts kits back into functioning guns, even if I think this gun is very mid. It’s like a Ruger Mark, but without the sheer aftermarket and market saturation. If this had a threaded barrel, I would rate it higher because the grip is very comfortable.

I’d like to give my thanks to DBFirearms and Gerald.Katz, first for doing the last 20% of the modeling work for me, and second for convincing me to start buying Berettas.

Anyways, I hope this guide helps with anyone printing this frame or even just reassembling their own gun. Remember that gun rights are for everyone, yes, *Everyone*. Thanks! And have fun.

SoundShock

SECTION 2: TOOLS AND EXTRAS

Absolutely Necessary

- 3d Printer
- A computer to read this file and slice the STL
- Power drill/Impact driver. Battery drill ideal
- 2mm OR 5/64ths Drill bit (Critical Dimension)
- 3mm OR 1/8ths Drill bit (Non-critical, must be greater than 2.9mm but smaller than 4mm)
- Hammer – Nylon head ideal
- 2mm OR 1/16ths Pin punch (Critical dimension)
- 4mm Pin punch (Non-critical, but should be at least 3mm)
- Needle File, dual side curve+flat ideal
- Filament/flush cutters that came with your printer
- 3.5mm wide Flathead screwdriver
- 2.5mm Hex driver
- 3.0mm Hex driver
- 5.0mm Hex driver
- T8 Driver (See: Striker block assembly for nuances)

May Be Helpful

- Drill press
- Straight cut Flathead screwdriver
- M3x30mm screw (including M3 washer and M4 washer. See: Receiver Preparation)

SECTION 3: PARTS KIT CHECKLIST

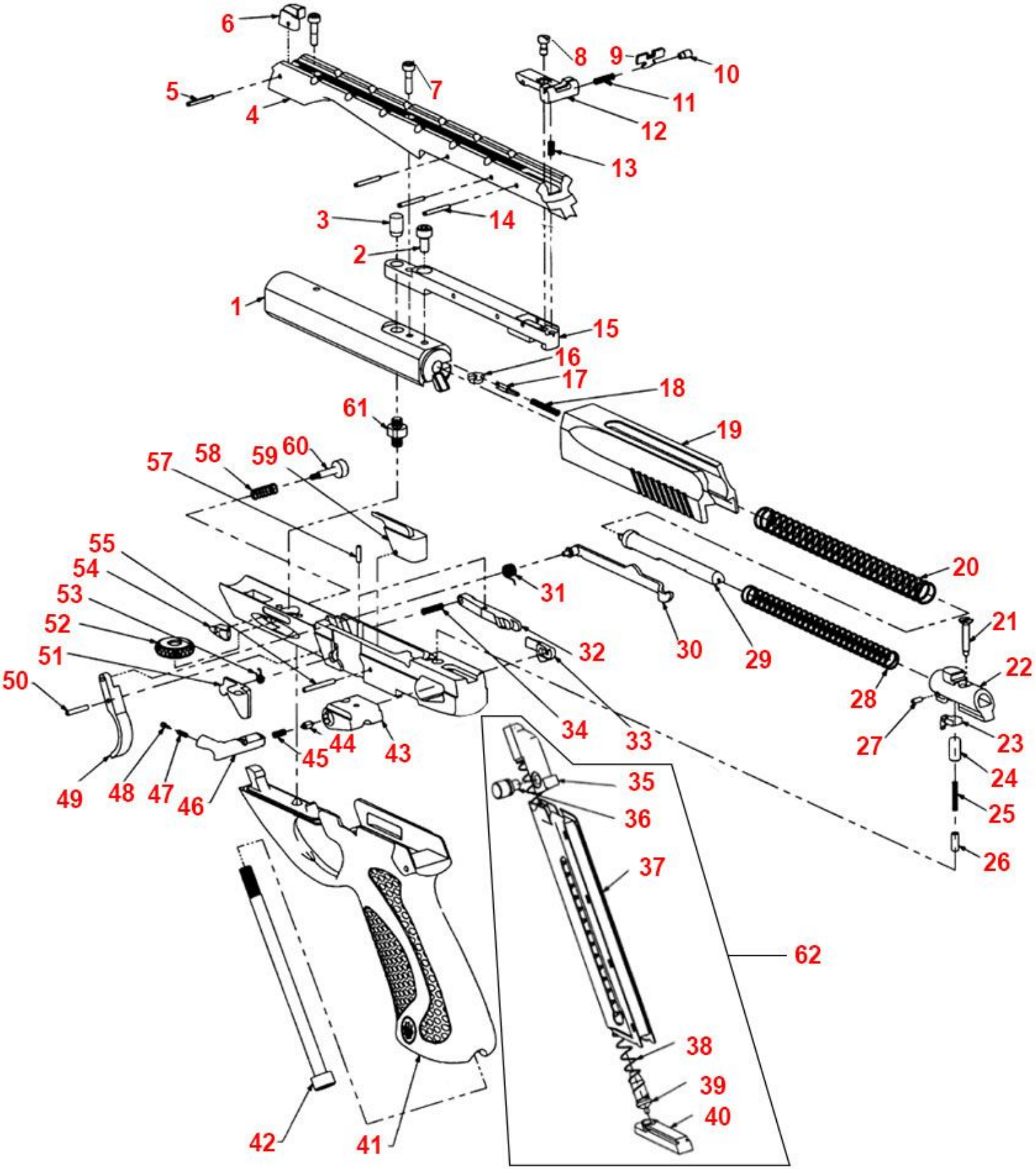
Barrel Assembly

- Barrel (1)
- Interposer Rail (15)
- Top Rail (4)
- Rear Sight (Including body (12), blade (9), detent screw (8), spring (13))
- Front Sight (6) (Including securing grub screw (5))
- Alignment slug (3)
- Interposer rail screw (2)
- 2x Top rail screw (7)
- 3x Top rail roll pin (14)

Frame Components

- Striker Block (22) (Including striker (29), striker spring (28), rear screw[1] (21))
- Slide (19) (Including recoil spring (20))
- Striker retainer pusher (24) (Including spring (25) and bottom cap (26))
- Safety (46) (Including right lever (33), detents (48, 44), and springs (47, 45))
- Ejector (59)
- Trigger (49) (Including trigger spring (31) and trigger bar (30))
- Mag catch (32) (Including spring (34))
- Barrel nut (52)
- Barrel nut retainer (54) (Including crossbolt (60) and spring 58))
- Grip (41) (Including grip screw (42))
- Slide catch (51) (Including spring (53))
- Magazine (62)
- M3 nut

1: Original U22s came with a flathead screw, you should replace this with the Hex head screw from Midwest Gunworks. The dimensions of this screw are in the Renders folder.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SECTION 4: 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.

PRINTING

This frame is not very picky about print settings. Every prototype was printed with wildly different settings and all of them worked, but the final was printed with the “overshoot” settings as follows.

- Layer height: 0.12mm
- Line Width: 0.4mm
- Wall line count: 8
- Top layers: 8
- Bottom layers: 8
- Infill: 99% Grid (100% can cause issues for some slicers/printers)
- Material: PLA+
- Hotend Temp: 220 C
- Build Plate Temp: 60 C
- Supports: Tree
- Maximum Branch angle: 50deg
- Support placement: Build plate only
- Build plate adhesion: Brim
- Brim width: 8mm

The original receivers are assumed to be glass filled nylon, so a fully solid frame is most likely ideal.

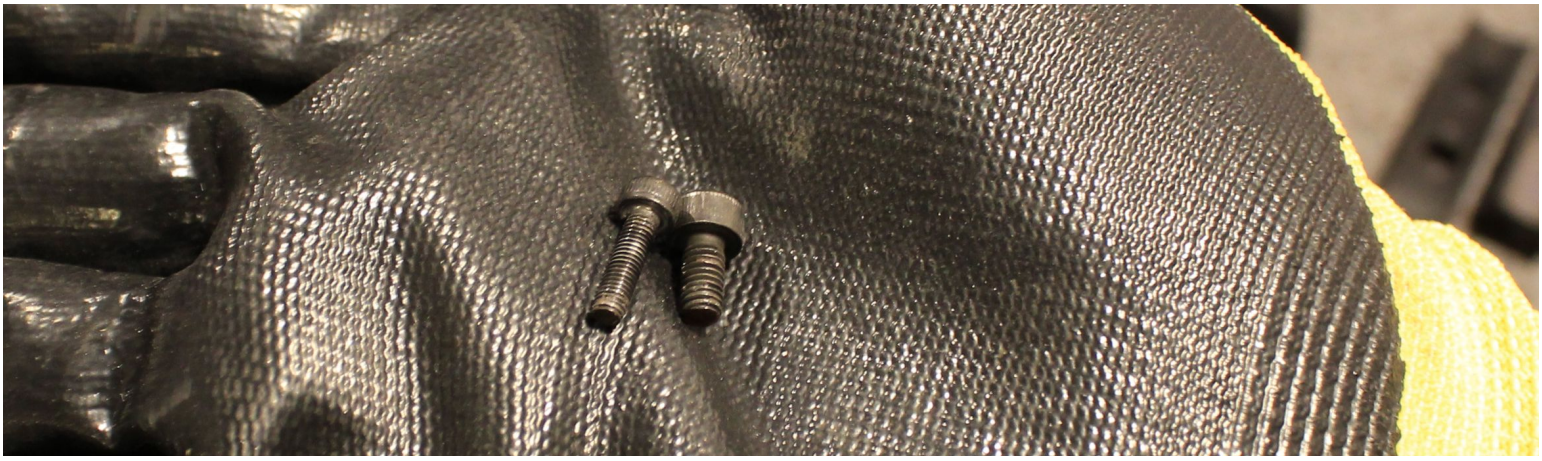
BARREL ASSEMBLY

If your kit did not come with the barrel disassembled, proceed to Receiver Preparation.

If you were unlucky enough to have your barrel assembly taken apart, make sure that you have some Loctite and all of the barrel components listed in Section 3.

First, locate the Interposer slug. One edge of the slug will be slightly more chamfered than the other (top in image) and this will be the edge that goes into the hole in the top of the barrel.

With the slug in the barrel, the next step is to mount and screw in the interposer. Place the large circle of the interposer onto the slug, then use the large screw to mount it in. This screw experiences a lot of vibration, and is butted against two solid materials with no tensioner. Thus, it requires loctite in order to stay in place. Use the 3.0mm hex driver to secure the screw.



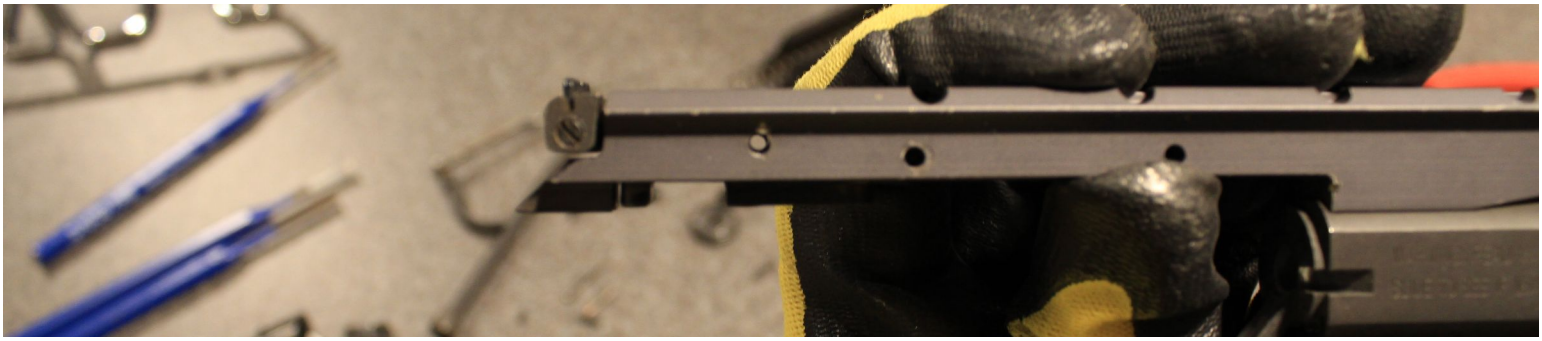
Once the interposer is screwed in, place the top rail on top.

Mounting the rear sight is next. Find the rear sight spring (Right).

It’s thicker wire than the Magazine catch spring (left). Place it in the spring hole in the back of the interposer.

Place the Rear sight unit on top.

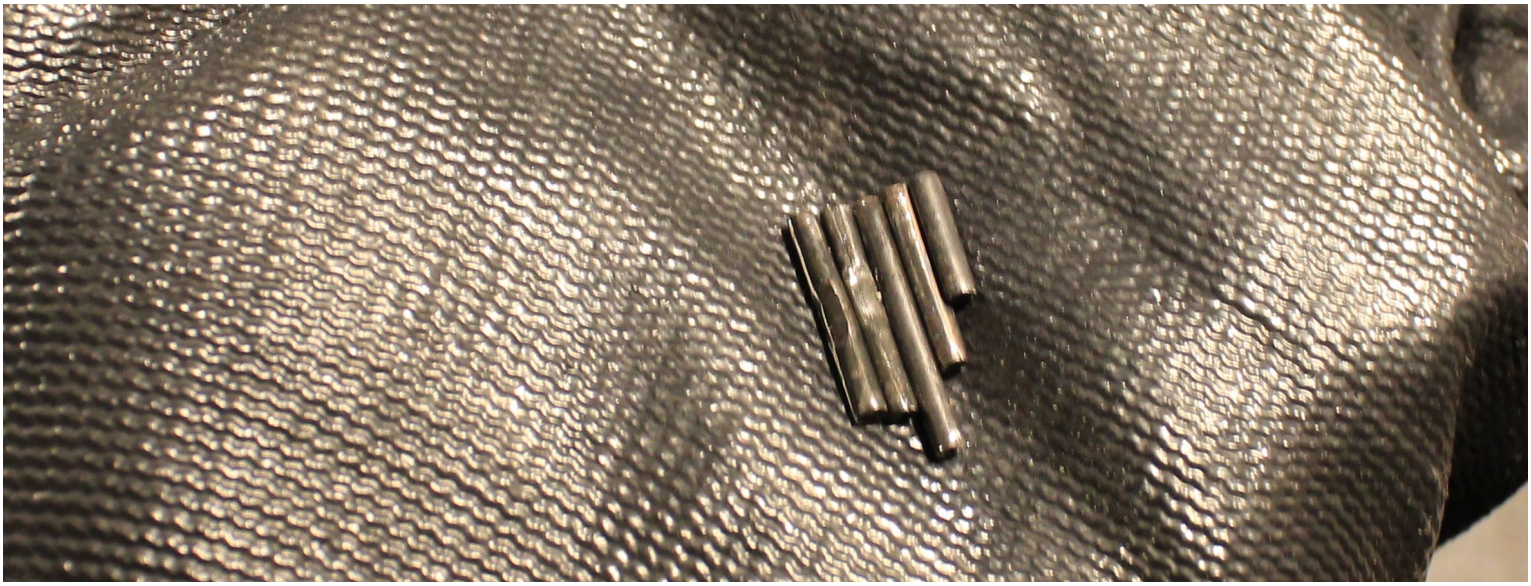
Screw down the height adjustment screw until it’s fully bottomed out, using the 3.5mm wide Flathead driver. It’ll stop rotating and clicking once it’s down. This should align the front hinge hole in the rear sight with the rearmost pin hole in the top rail.



Now that the rear sight is secured, the top rail should be secured. Put loctite on the thinner screws from before, and screw them all the way in. Use the 2.5mm hex driver.

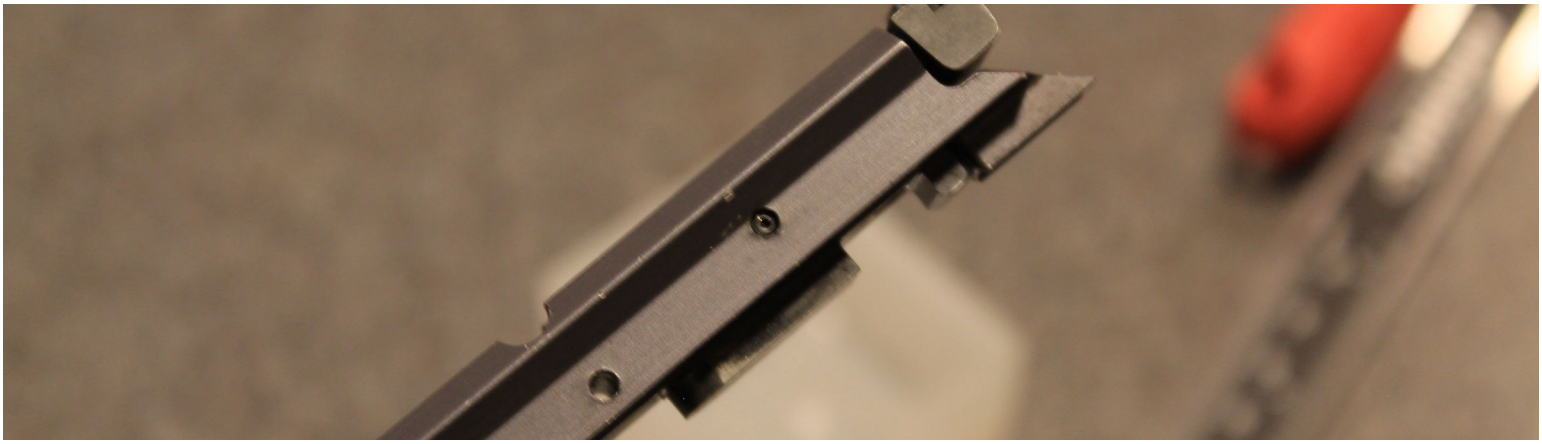
Top rail screw (left).

The last step is to press in the rear sight pin and the securing pins. Inspect all of the roll pins you have, and find the three almost-longest pins. These are the top rail pins, and they are all identical. I only have two, so I decided to place them in the rear sight hole, and the middle hole.



The top rail pins (left two).

Place the pin in, then use the 4mm pin punch to send it home.

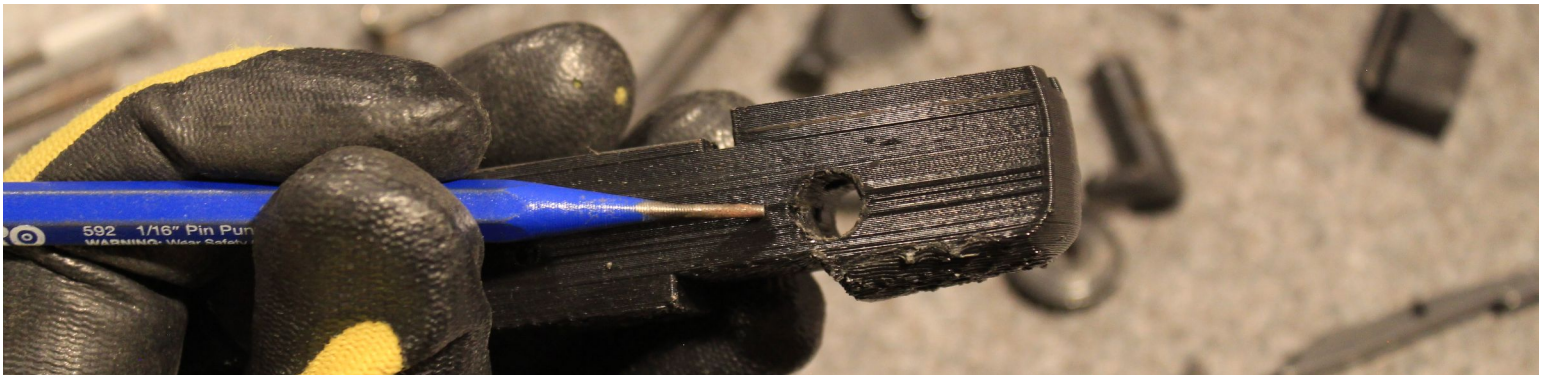


The pin should be slightly flush on both sides, so switch to the 2mm punch and give the pin a small tap to make it *just* below the side you're going in from. It should be below the rail surface on both sides when done. Repeat for the other 2 pins.

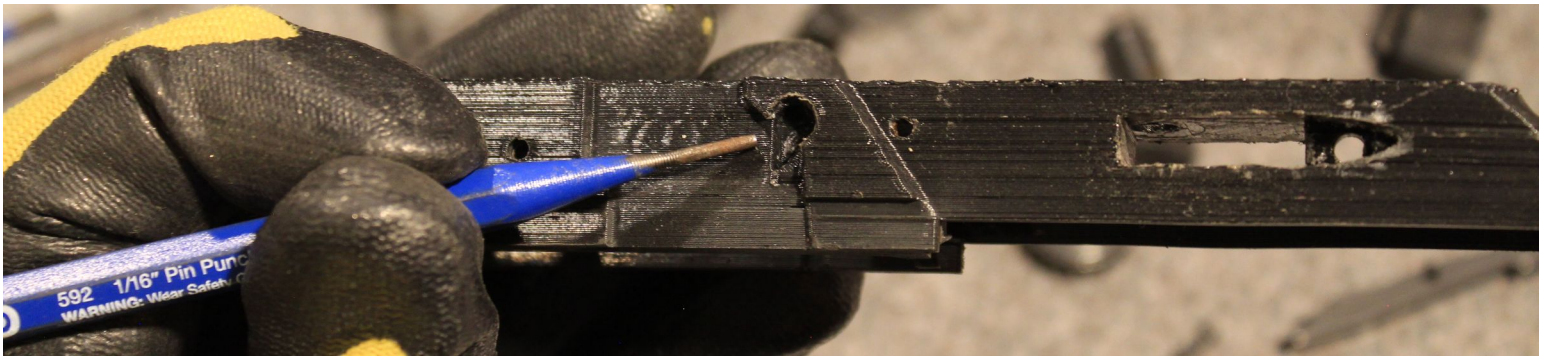
Barrel assembly complete.

RECEIVER PREPARATION

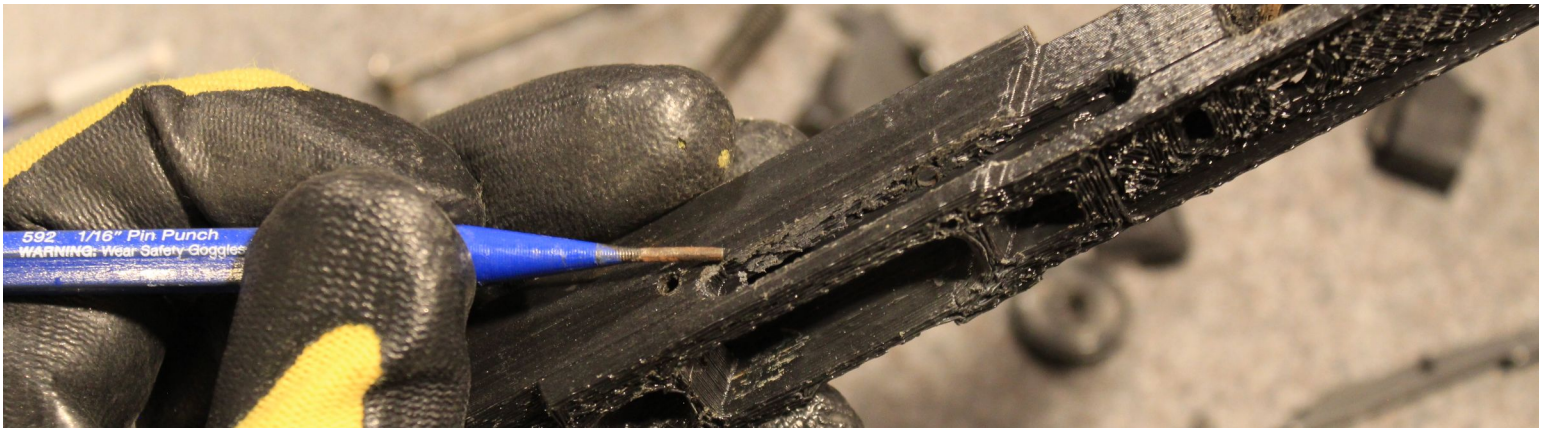
After the receiver comes off the print bed, you'll need to break some edges and file a few things smooth. Start with the Safety drum hole. Use the round profile needle file and smooth out the inside until the safety rotates in it smoothly. Ideally, don't mess with the detent positions, they should have printed fine.



Next, use one side of the filament cutters to break the edges on the top of the Slide catch area, where the semi-circle is. Place the slide catch without the spring into this area and ensure it fits flush to the surface and can pivot up and down.

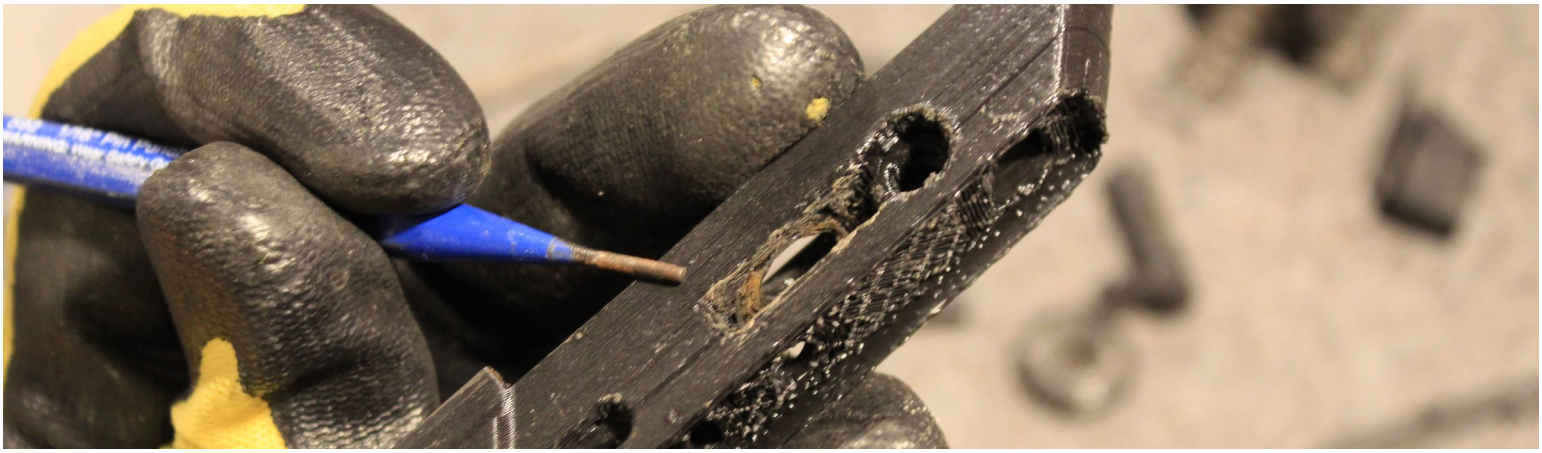


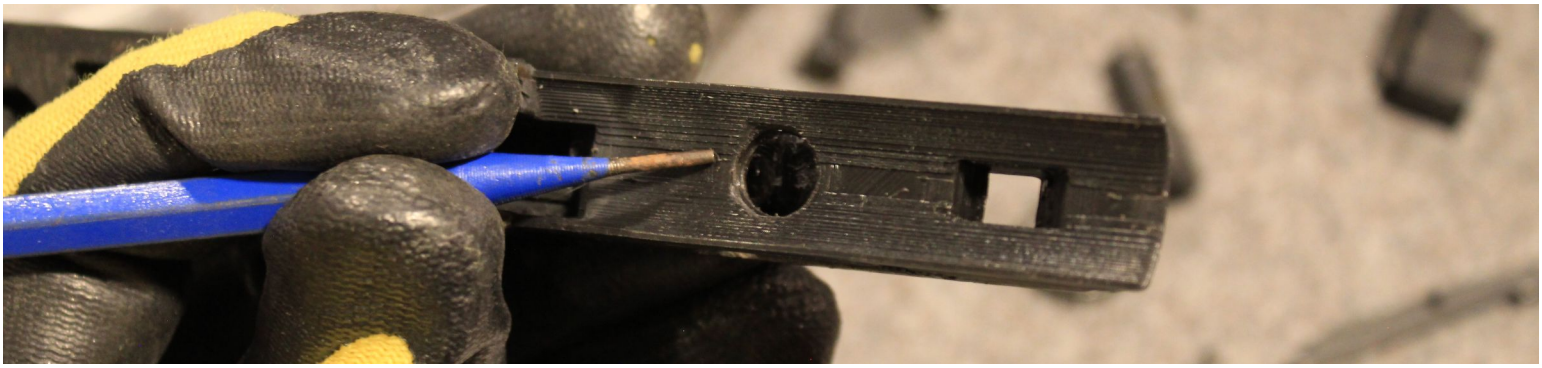
Use the flat profile of the needle file to get at the inside channel of the mag catch. File the rough ceiling until it's smooth, then file the bottom a small amount to break the edges of the print.



Slide in the mag catch to insure it fits through with very little resistance.

Use the flat profile on the Barrel nut slot in a similar manner to the mag catch. Use the round profile on the triangular inner surface on the left side to make sure the retainer fits.



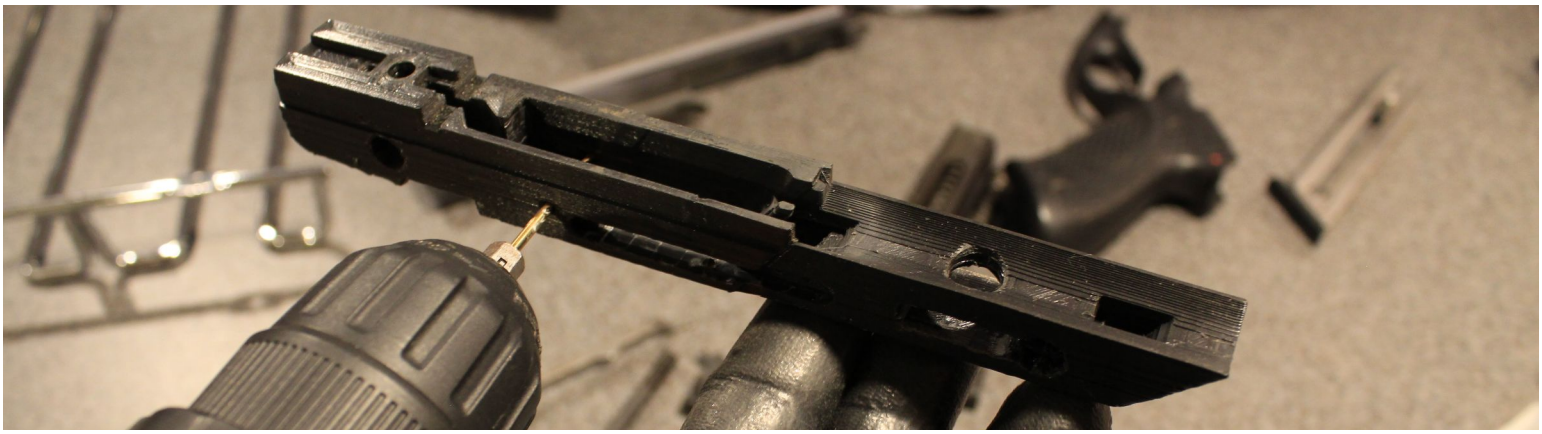


Use the round profile needle file and hit the top edges of the barrel mount hole to make sure the barrel can slide all the way down into the hole.

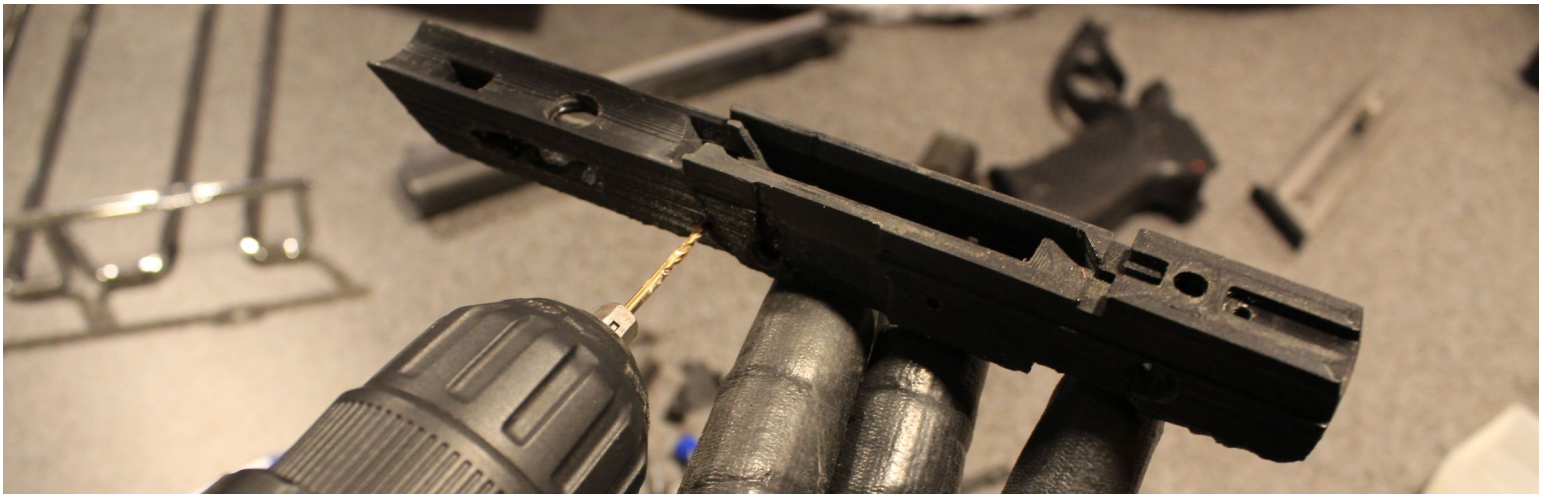
Pin diameter

Drill bit diameter

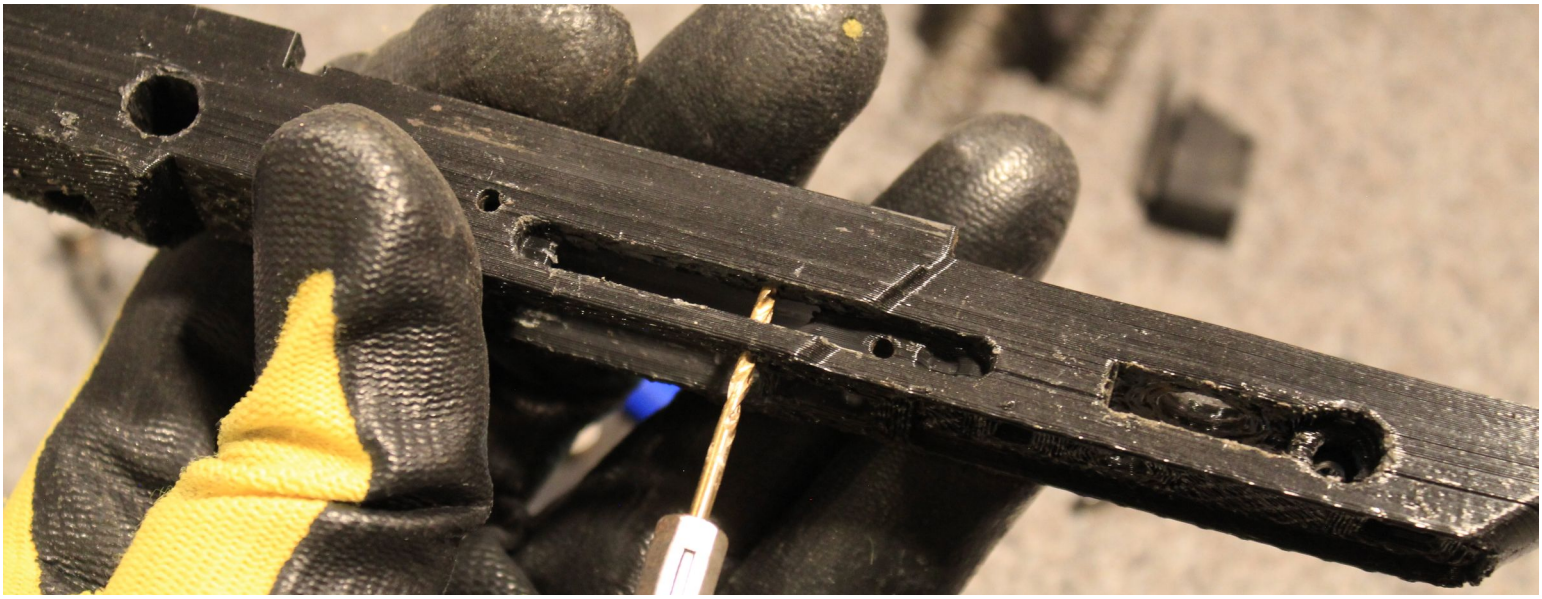
Now that all of the interface surfaces that interact with the metal parts fit, you can prepare the pin holes. Take the battery drill and a 2mm or 5/64ths drill bit (which should be slightly smaller than the pins) and drill out the following.



Ejector pin hole.

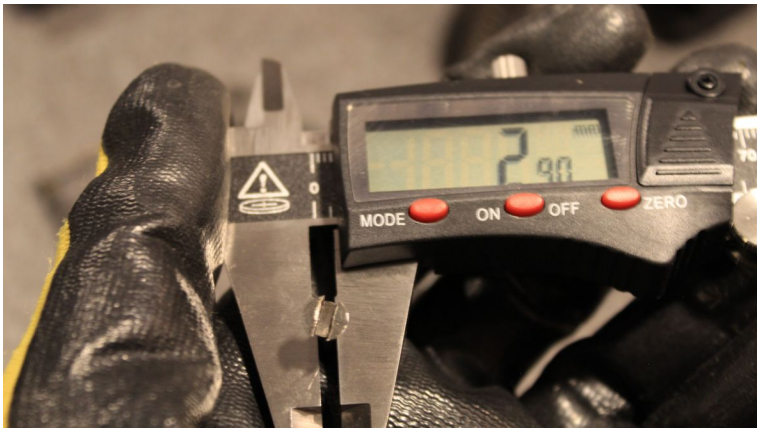


Trigger pin hole (Recommended to do it from the left side as shown).



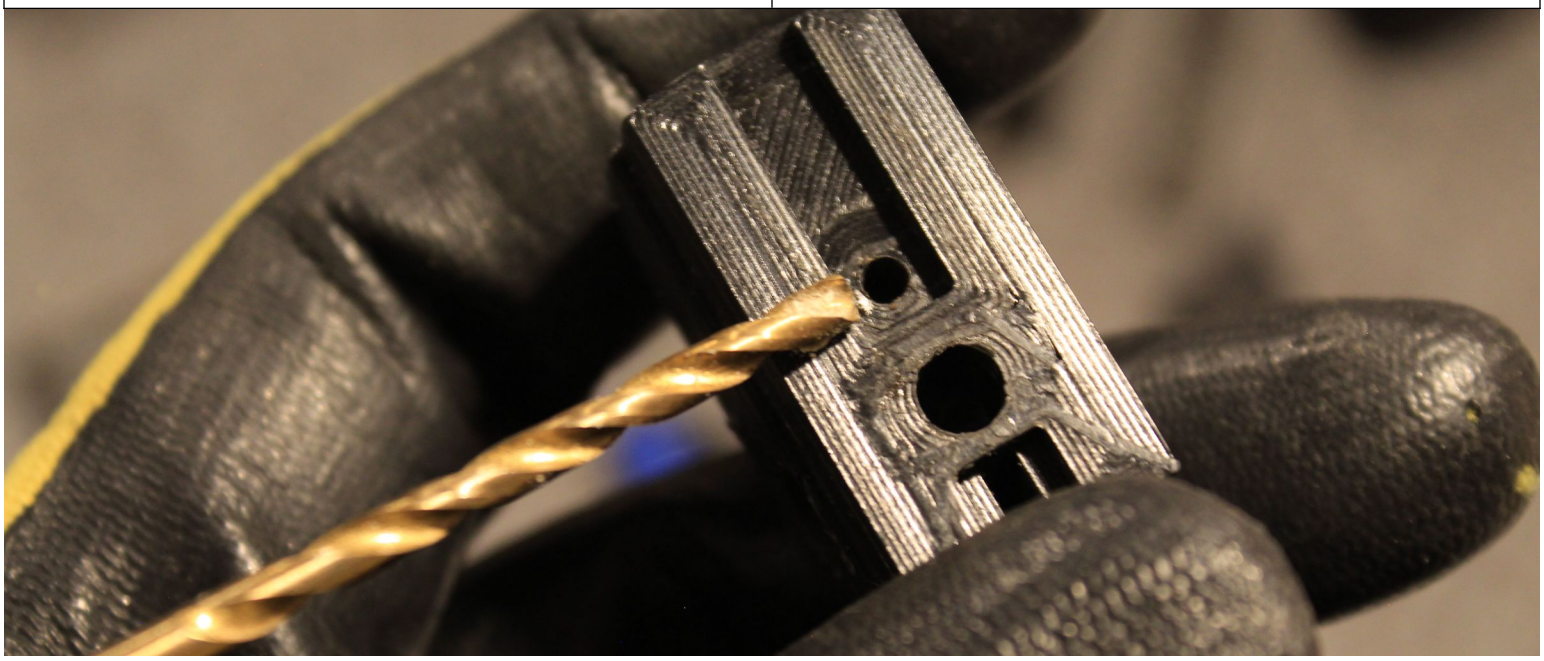
Mag catch pin hole (Recommended to do from the bottom as shown).

Lastly, the screw hole for the striker block needs to be prepared. Take a 3mm or 1/8th inch drill bit, and drill the rearmost vertical hole in the back hump of the frame.



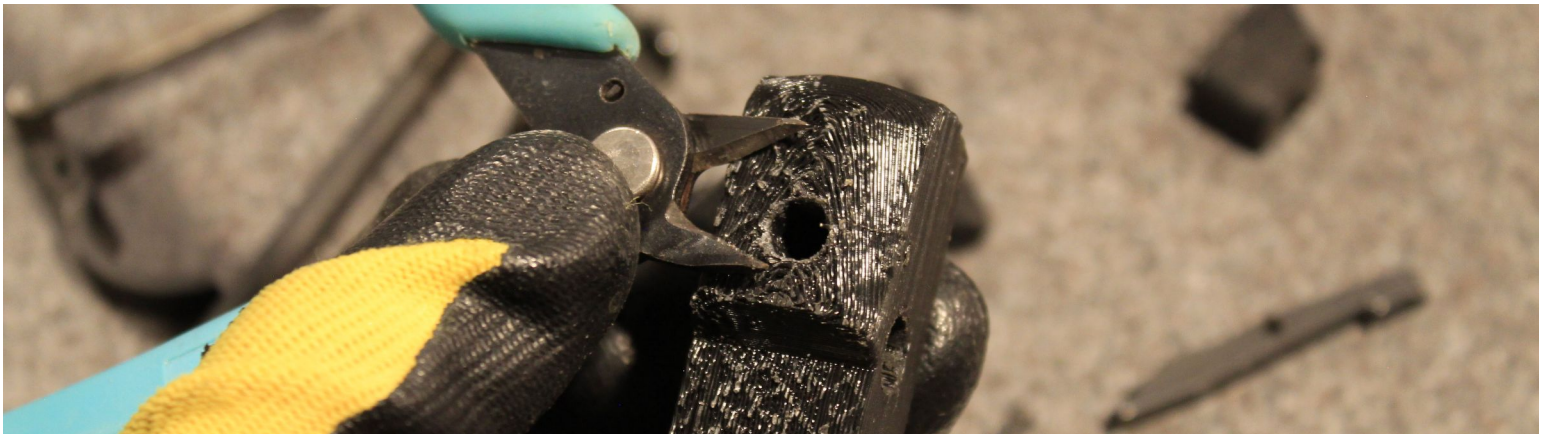
Striker block screw diameter (M3)

Bit diameter (must be larger)

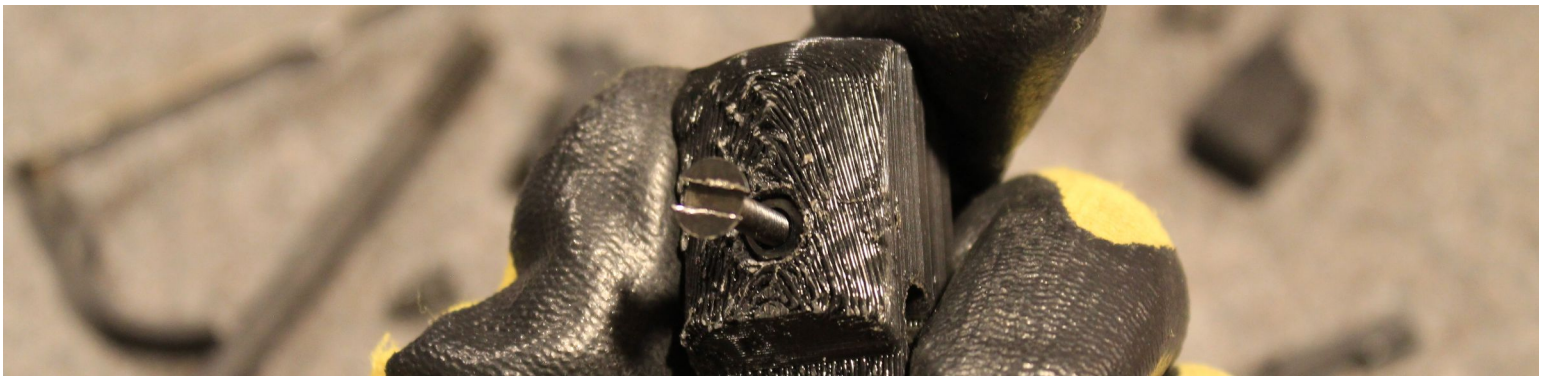


Push the striker block screw in through the hole to make sure it goes in cleanly. You'll want no resistance later.

This is where the M3 nut comes in play. Because the original securing block from the original frame is likely lost, impossible to remove, or just epoxied into the frame and you don't want to remove it, I elected to replace it with an M3 nut. Use the filament cutters or flat profile needle file, and break the edges of the hexagonal hole underneath the receiver.



If you don’t have a spare M3x30mm screw, you may be able to use the striker block screw as a directed punch. Screw the nut partially onto the screw, place it in the hole, and use a nylon hammer to hit it into the hole. If you have a large pin punch that covers the whole nut but still fits in the hole, that should work too.

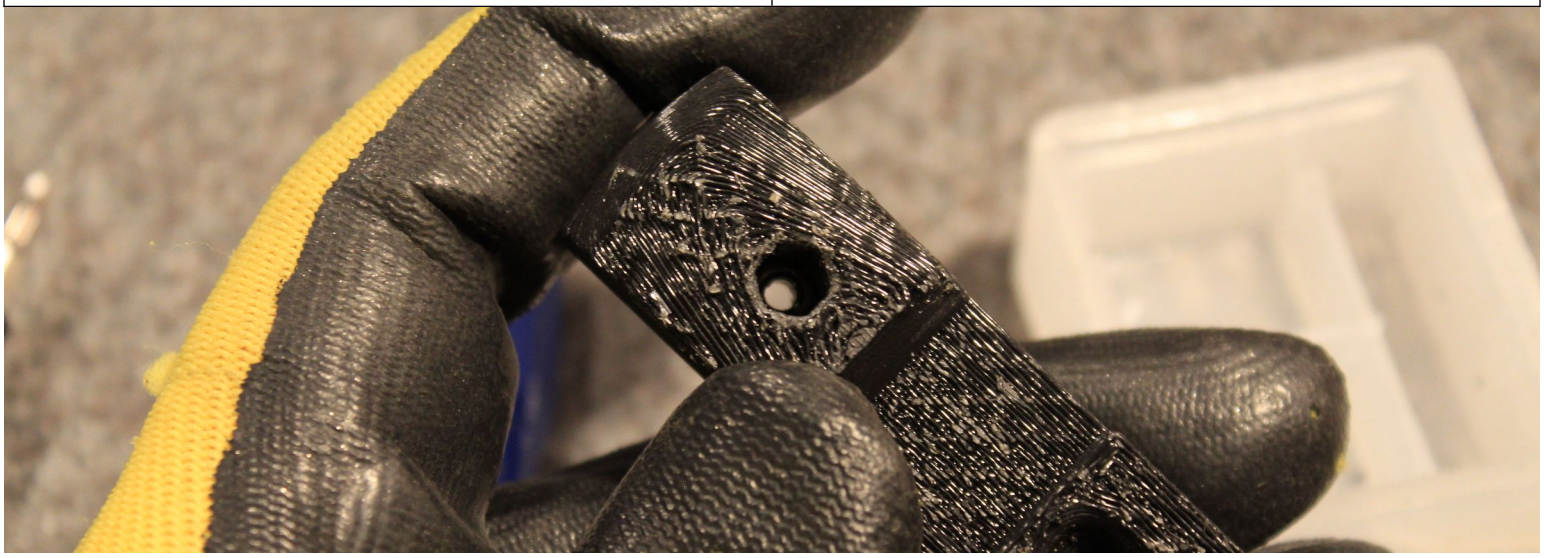


An “easier” option however, is by using an M3x30 screw with an M3 and M4 washer. The M4 washer is necessary to distribute the force. Place the screw through the top of the receiver, thread the nut onto it, and use the 2.5mm hex driver to pull the nut fully into the receiver.

	
M3 bolt with an M3 washer and M4 washer	Placed into top of receiver

Nut partially threaded onto screw

Nut threaded all the way down



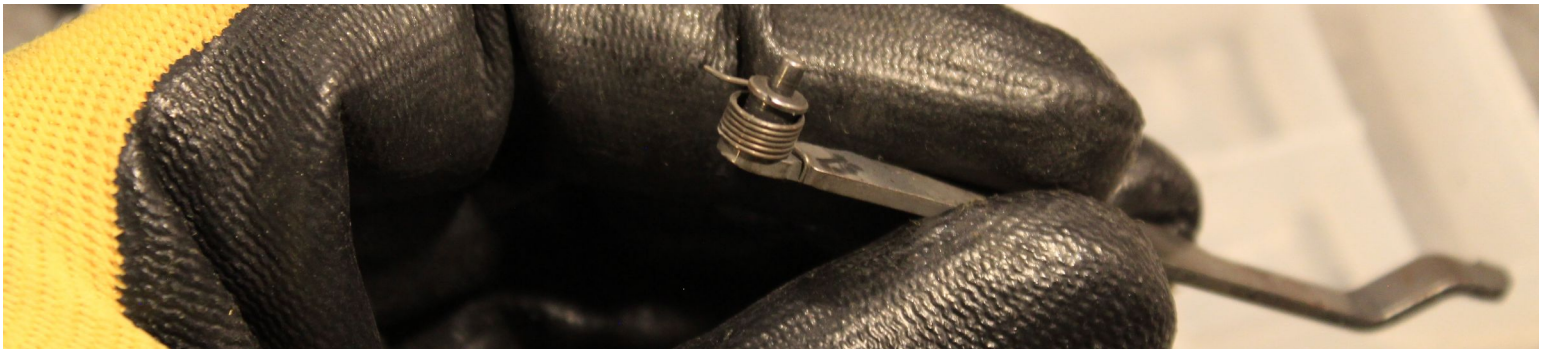
Screw removed, the nut is now all the way down in the channel, held in with friction. The hole was designed to have somewhat of a tight fit.

Receiver Preparation complete.

RECEIVER ASSEMBLY – TRIGGER AND MAG CATCH

Now that the receiver is prepared, the components should all fit right in place with minimal extra fitting/jostling.

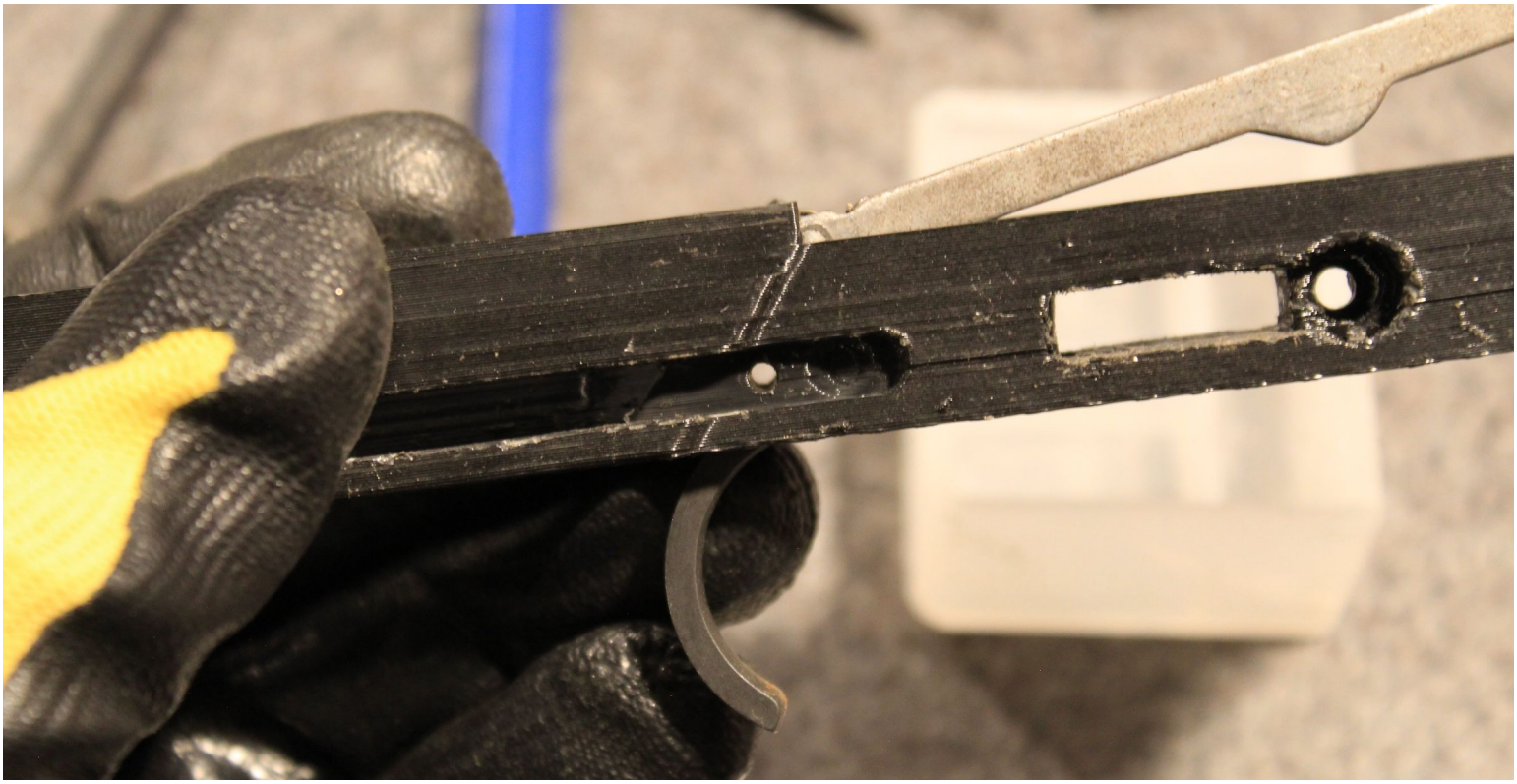
First, take the trigger bar and place the trigger spring onto the drum with the bent leg on the bar.



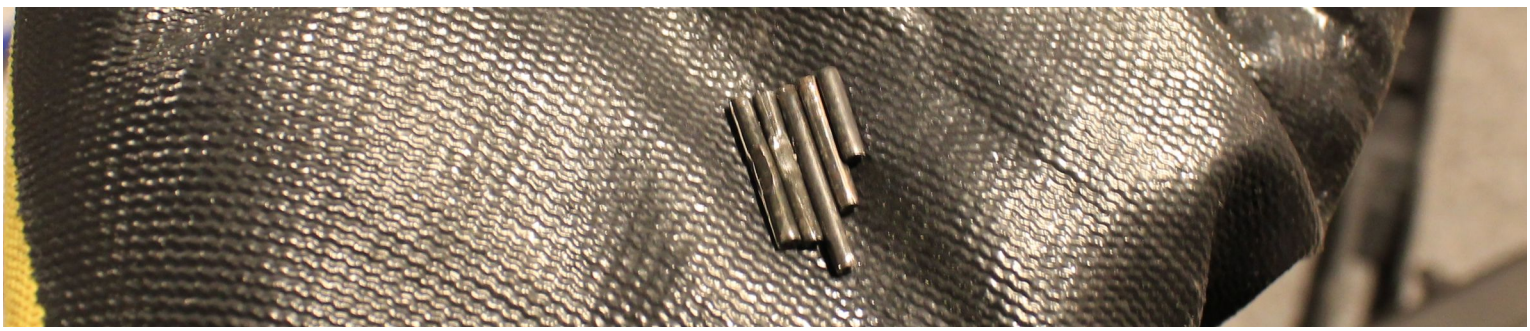
Now place the trigger on top, tensioning it slightly against the spring.

The angle shown in the photo should be the resting position of the trigger spring. If you pull the trigger to be inline as an extension of the bar, it should then push itself back to this angle.

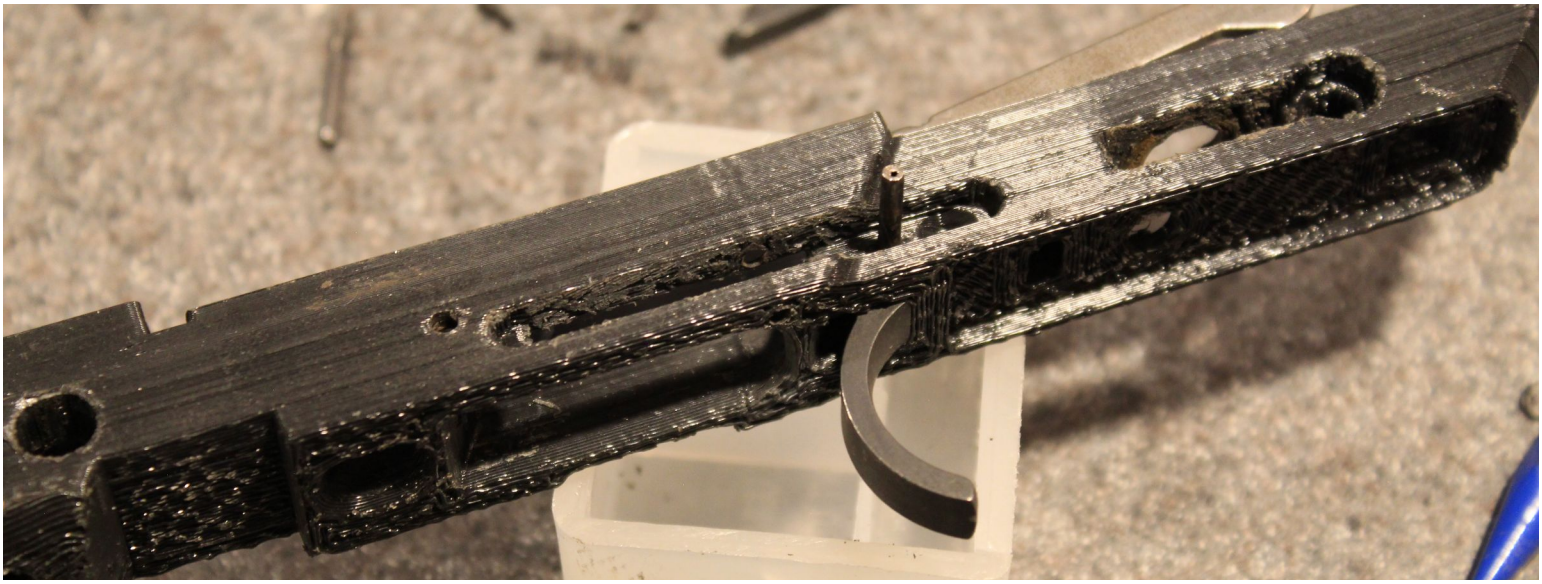
Slide the trigger into the pocket in front of the magwell, aligning the pin hole.



Go back to your stack of roll pins, and grab the middle length pin.



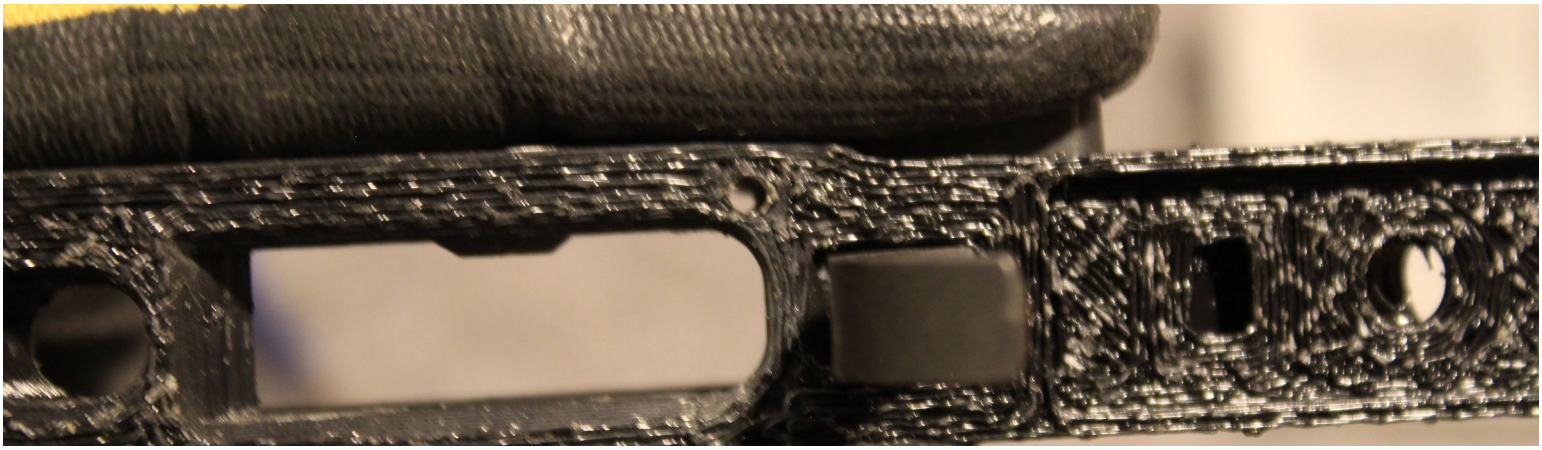
Trigger pin (middle right).



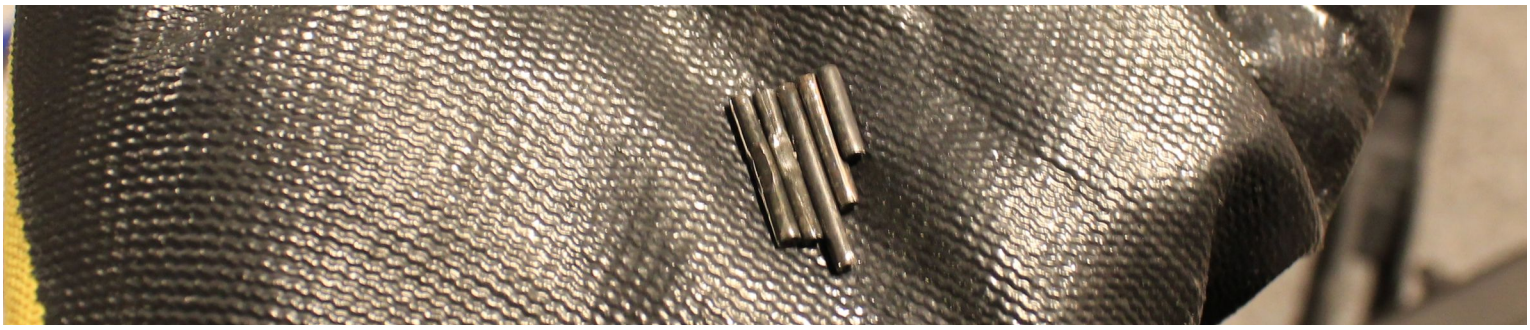
Hammer the pin flush to the right side surface using the 4mm punch. It is important that it is flush on this side, as if it’s in too far, it won’t be supported on the right, and if it’s not in far enough, it’ll bump into the mag catch.

Now for the mag catch. Find the spring and place it into the top of the mag catch, then align it with the chamfered divot in front of the trigger pin.

Mag catch spring (left).



Press the catch in until it’s flush and aligned with the pin hole. Take the shortest roll pin remaining and place it into the hole.



Mag catch pin (right-most).

Pin partially inserted through bottom of frame.

Use the larger 4mm punch to send the pin flush with the bottom of the frame.

You may notice the pin sticks up slightly further than the inside surface in the frame. This is completely normal, and does not interfere with anything.

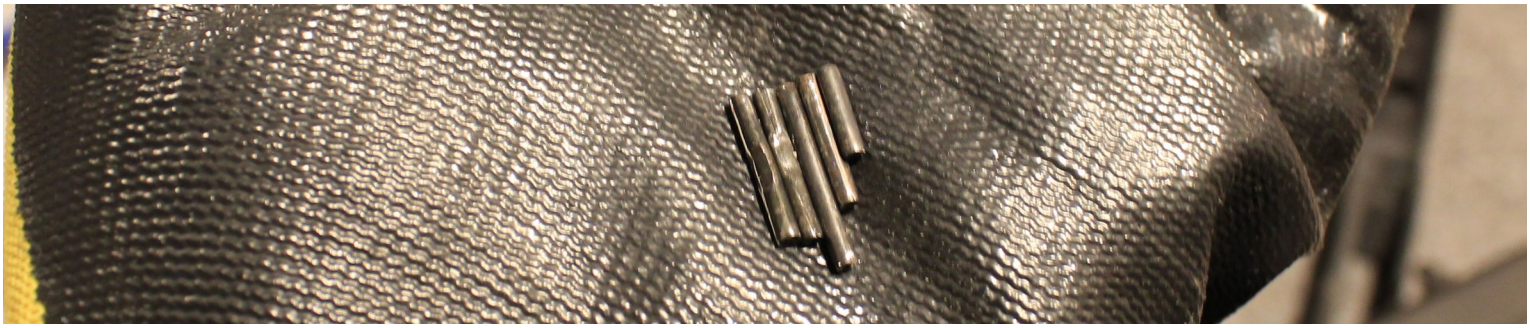
Insert a magazine to test fitment.

The magazine should drop free out of the gun when the button is pressed.

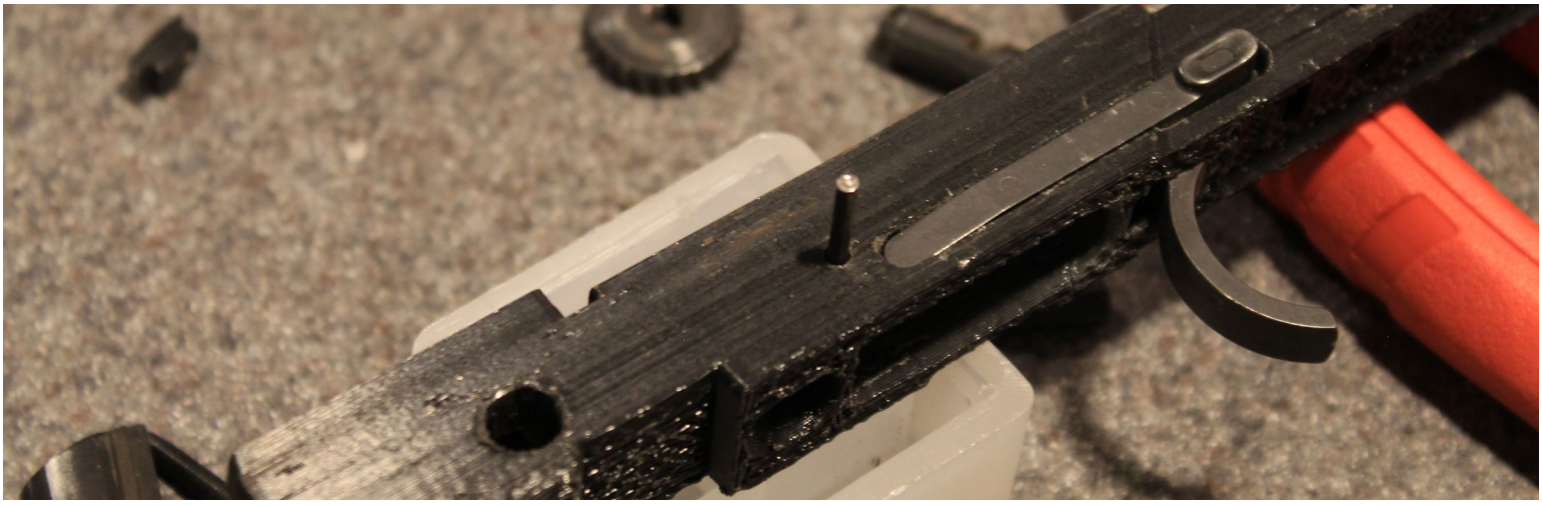
RECEIVER ASSEMBLY – EJECTOR AND SAFETY

Place the ejector in the rear pocket of the magwell.

Take the remaining longest roll pin and place it into the right side of the receiver. I recommend the right side, as the left side may jerk the ejector and cant it out of its pocket, requiring resetting.



Ejector pin (middle).



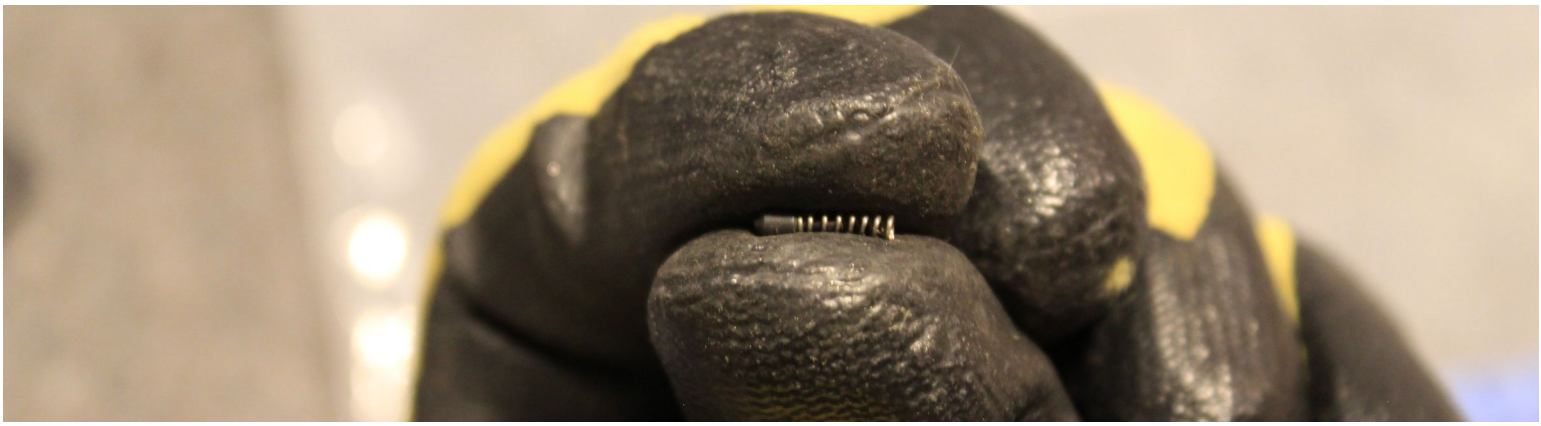
Due to the nature of being a long pin and going into the extremely tight ejector hole, you should wrap a small amount of tape around your 4mm punch to keep the head of the pin inside the punch area.

Hammer flush, remove tape if needed to get all the way down.

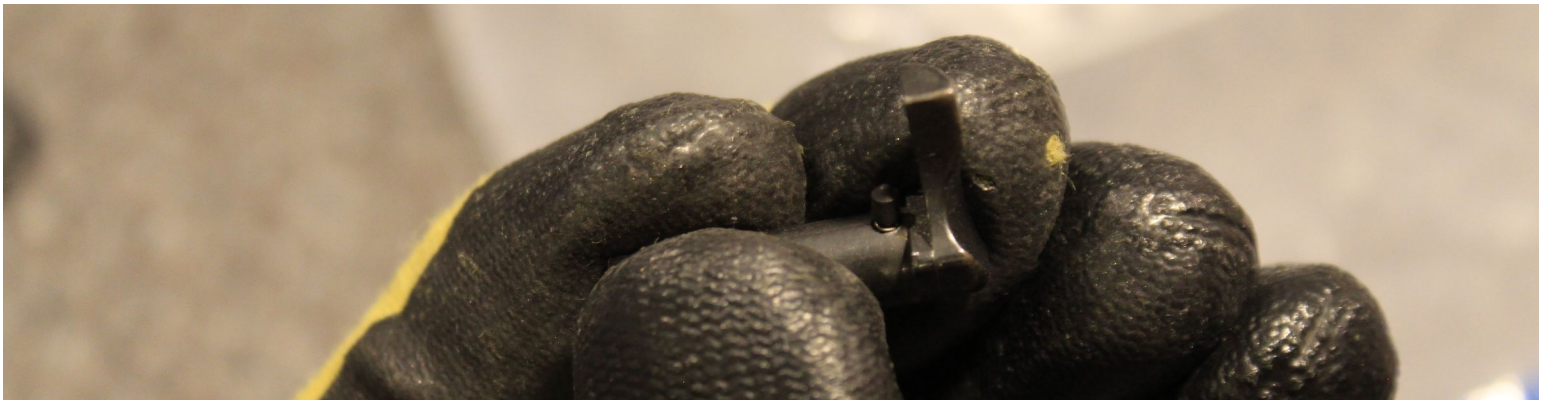
I cannot stress this enough, for the next section to install the safety. Place the receiver into a plastic bag, and make sure the front of the receiver is facing the bottom wall of the bag. I have lost 2 of the safety detents from not doing this. They’re only 2 dollars from MGW, but you’d need a decently large part order to justify ordering one. Just assemble the safety in a bag.

The receiver as currently assembled, in the bag with the safety and right safety lever. The safety detent pin and spring are inside the plastic cup as shown.

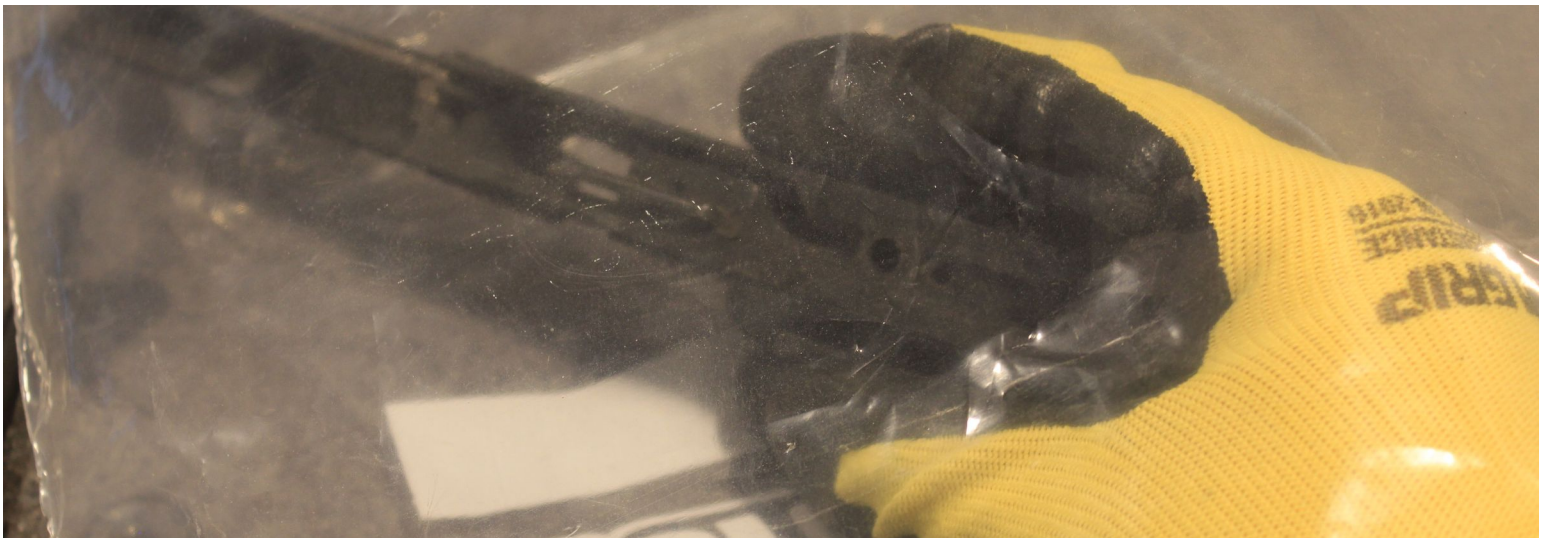
While working over your table, place the safety detent into the spring.



Find the detent hole, and place the detent in the safety drum.



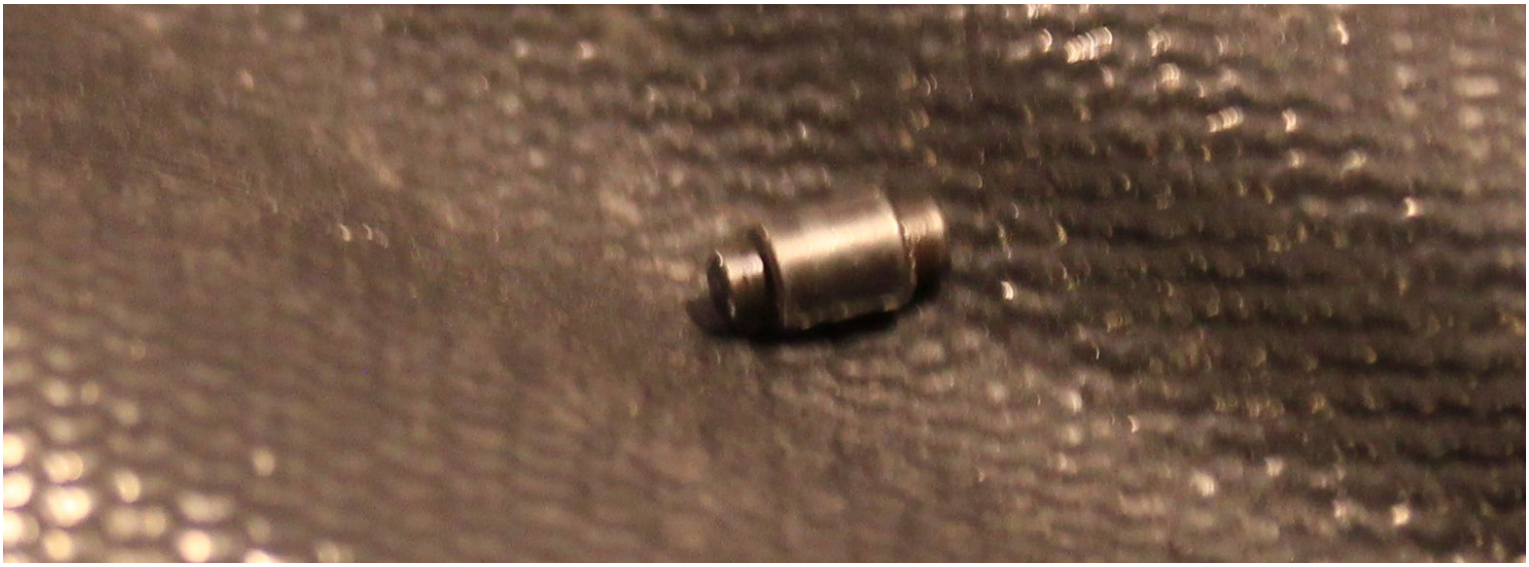
Carefully, bring this assembled unit into the plastic bag.



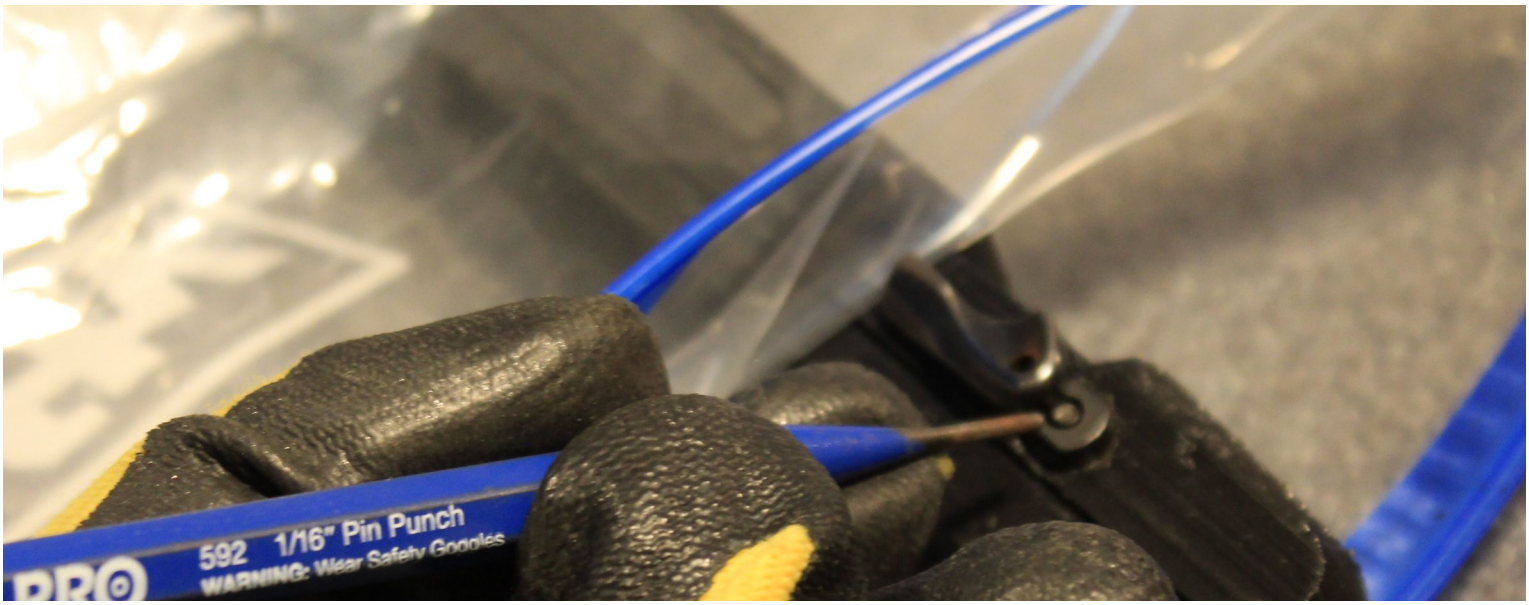
I apologize for the poor photo, but I wasn’t taking any chances. Slide the safety drum in through the left side of the receiver until the safety detent stops it. Applying gentle pressure against the safety (as if you were able to push the safety into the frame further) will hold the detent in place with friction. Using the 2mm punch, press the detent further into the drum while still attempting to push the safety into the receiver.

Eventually, the detent will be pushed enough to fall into the receiver. **Hold the safety in place against the side of the receiver.**

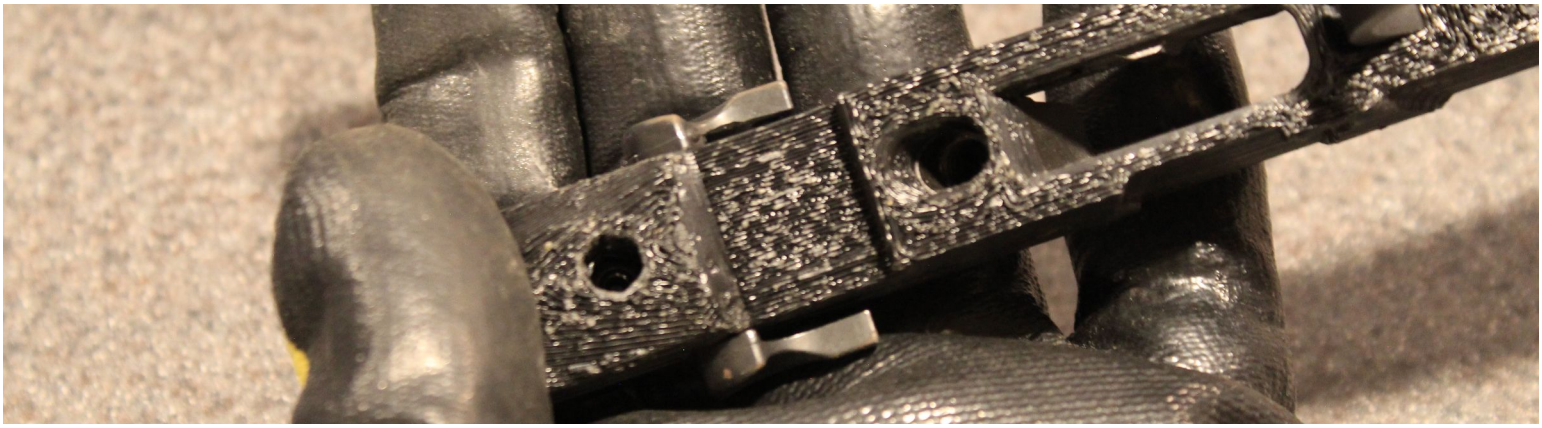
Next, find the right safety lever detent and spring. My kit was missing the spring, so I'll just be using the detent.



Ensure the receiver is still in the bag, with the safety detent pointed to inside the bag. Place the right side spring and detent into the hole on the right.



Slide the right lever on until it's blocked by the detent. **While the bag is covering the detent,** use the pin punch to press the detent down, and slide the lever on at the same time.

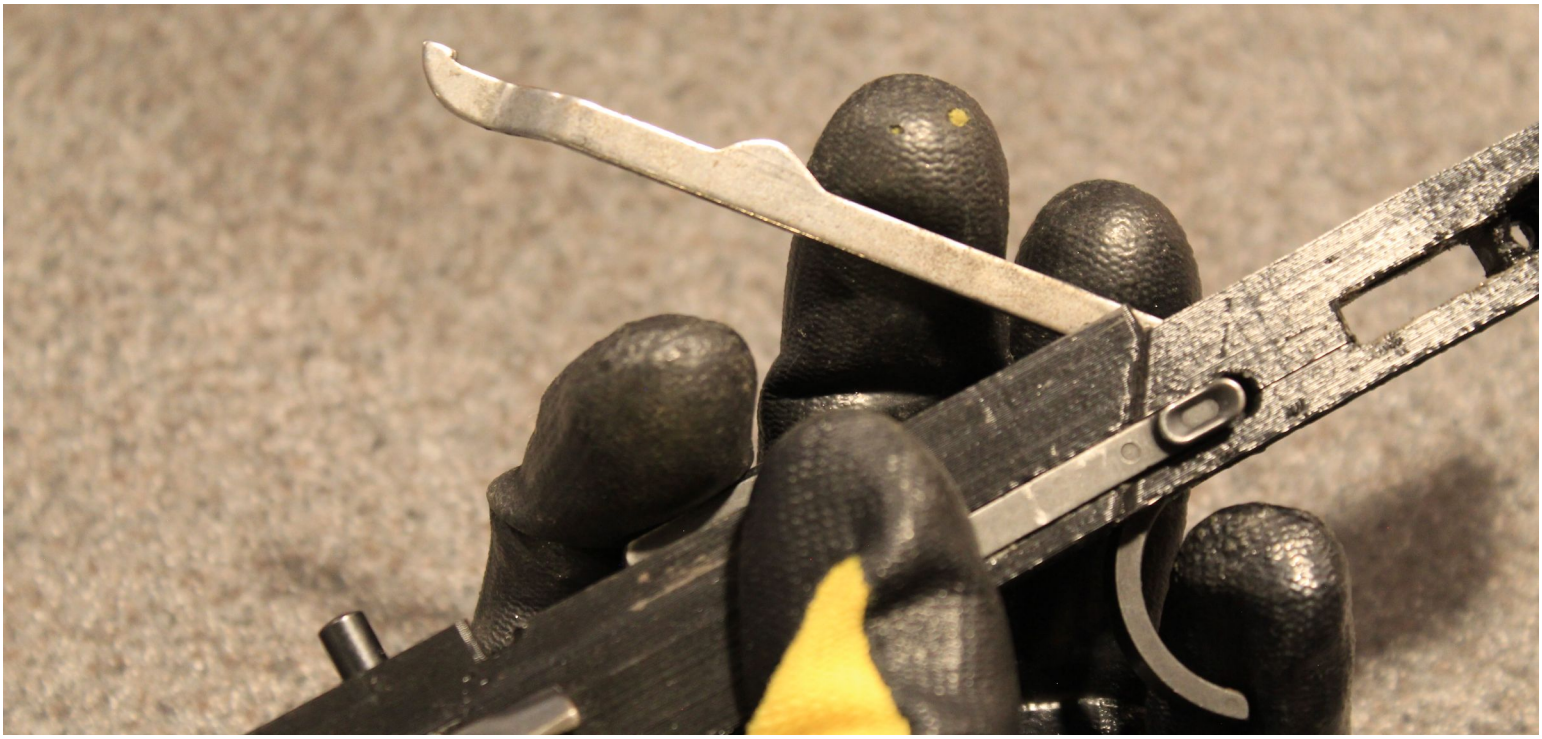


RECEIVER ASSEMBLY – STRIKER BLOCK

Now that the crisis of the safety detents is over, it’s time to place the striker block.

Grab the striker retainer pusher and its spring+cap, and place it small side down into the hole. This hole *should* be large enough to have the pusher slide in and be able to fall out, but to make sure, you should use the round profile needle file on the inside if you start to feel any resistance while pushing down on it.

Take the trigger bar and rotate it backwards into the slot.

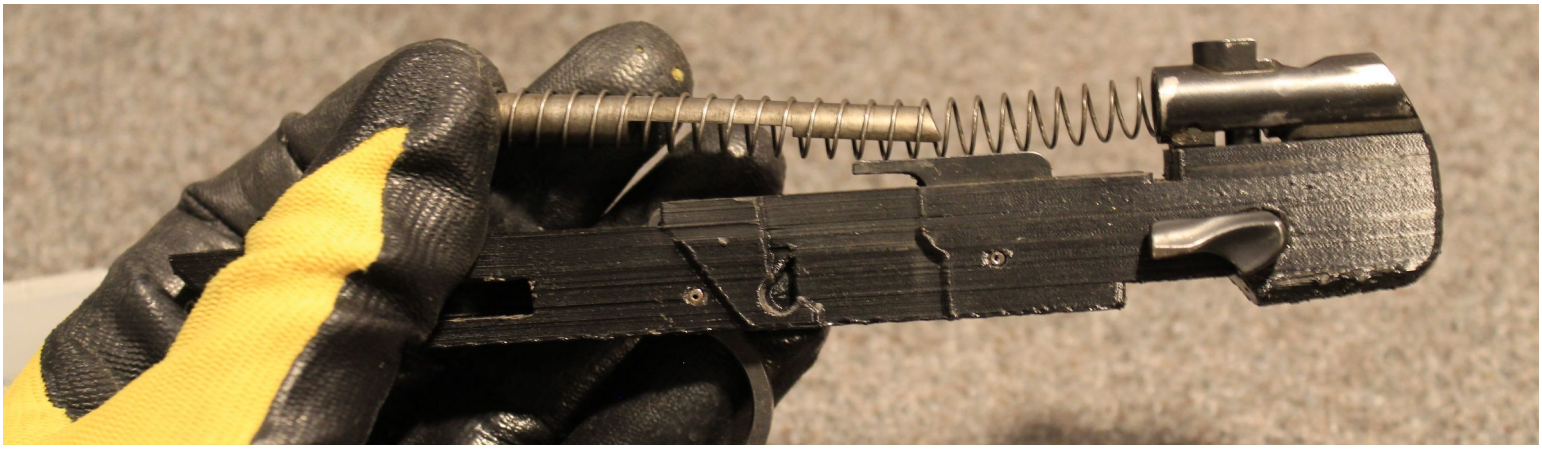


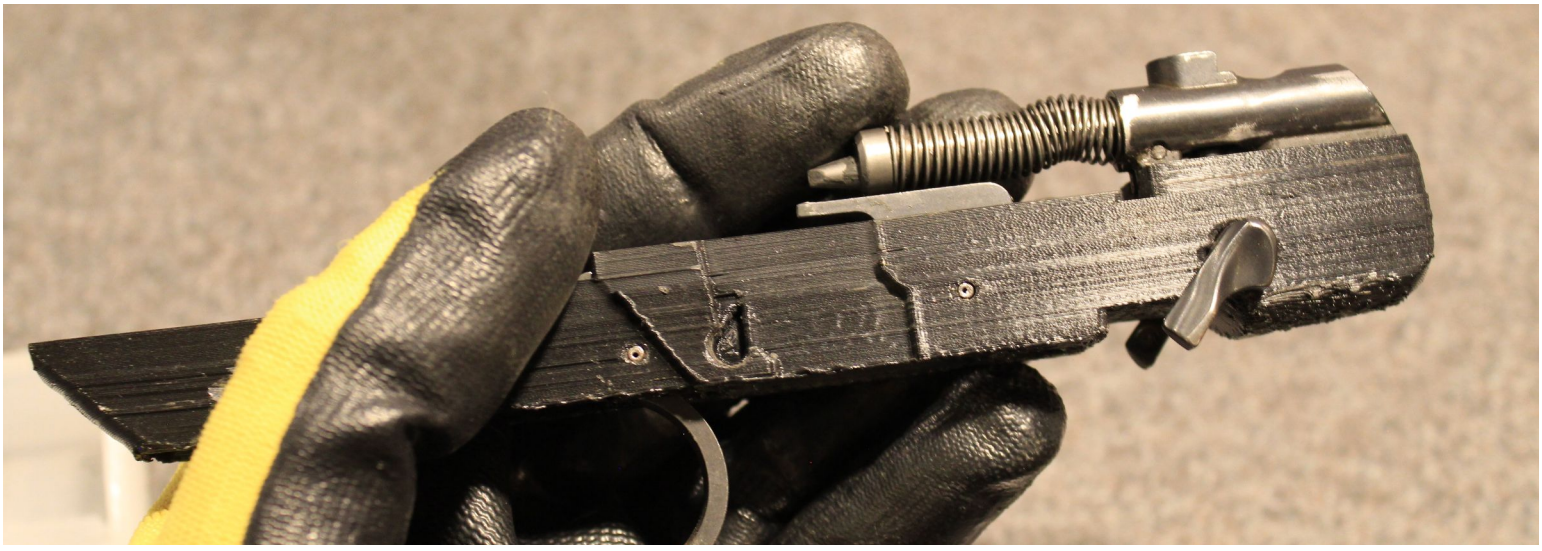
While holding the trigger bar in place, place the striker block into place.

Next, take the countersunk screw, and place it into the block.

I’ve found that a T8 screw is just the right size to fit into the slot of the old flathead style screws. If you don’t have *exactly* the right type of screwdriver to get at this screw, or if yours is stripped like mine, this is the best bet to reuse the original screw. Ideally however, just buy the upgraded screw from MGW which uses a Hex head.

Take the striker and its spring, and push it into the block.

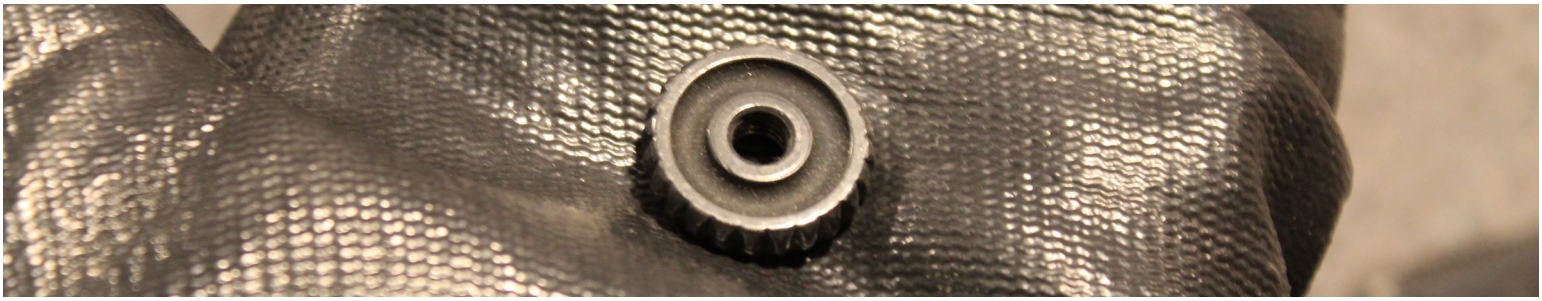




You can use it as a metal dart launcher now, but I wouldn’t recommend it. Flip the safety downwards to safe.

RECEIVER ASSEMBLY – BARREL MOUNTING AND SLIDE

Take the barrel nut, groove side down, and place it into the receiver up front.



Then, on the left side, slide the retainer into the triangular part of the slot.

On the right side, place the retaining spring into the slot, then screw in the retainer screw. My kit was missing the spring, so I can only show the screw. It works without it though.

Grab the slide catch and its spring next.

Take the spring, and place it into the teardrop shape inside the receiver. The leg with the 90 degree bend should be pointing out.

Place the slide catch on top,rotating it down to alight the bent leg into the small divot on the catch.

The next step can be a bit of a pain. You need to rotate the slide catch upwards against the spring leg while also pushing the pivot point of the slide catch into the spring *and* the slot at the same time. It will require a bit of finagling to get it in there, but once it is, *hold it tight* against the receiver.

Now grab the grip and slide it onto the gun.

Keep holding the slide catch until the grip is fully mounted.

Press on the front of the trigger guard to click it into place with the receiver.

Take the grip screw and slide it through the bottom.

Use the 5.0mm hex driver to thread it into the ejector.

Once it’s decently tight, insert a magazine and check to make sure the slide catch gets pushed upwards.

Now remove the magazine.

Take the slide and its spring, and slide it over the striker, all the way back until you can hold it in place with the slide catch.

Place the barrel on top, slotting it into the top of the striker block, and into the barrel nut hole.

Twist the barrel nut until the barrel is fully against the frame, and the nut is very tight.

Finally, screw down the retaining screw for the barrel nut using the 3.5mm wide flathead driver.

FUNCTION TESTING

Flip the safety up. Hit the slide catch to release the slide. Remember to keep live ammo away when testing.

	
Open	Ready

Due to the design of the U22, it can be safely dry fired.

	
Striker Indicating Ready	Fired

Insert a magazine and test that the slide catch locks open on empty.

Make sure that the safety prevents the trigger from releasing the striker when engaged. As far as I can tell, it prevents the striker from falling by preventing the retainer pusher from traveling all the way down the hole.

Remember to lubricate all friction surfaces.

SECTION 5: TROUBLESHOOTING

Due to the low availability of parts kits and testers, I wasn’t able to get much feedback on troubleshooting.

Magazine Stuck/Doesn’t Drop Free: Ensure the inside of the magwell in the receiver is smooth/inline with the grip magwell. Use the needle files from before to smooth out any surfaces that the mag is getting stuck on.

Mag Catch Stuck Open: The design of the slot was deliberately extended to allow you to stick a tool in front of the mag catch and force it closed. On some frames, doing this repeatedly eventually made the catch move freely. Otherwise, go back to receiver preparation and file the mag catch ceiling and floor to smooth it out.

Slide Catch Doesn’t Work: The grip is most likely pressing too hard against the catch. File the inside receiver pocket where the slide catch rubs against to free some more space.