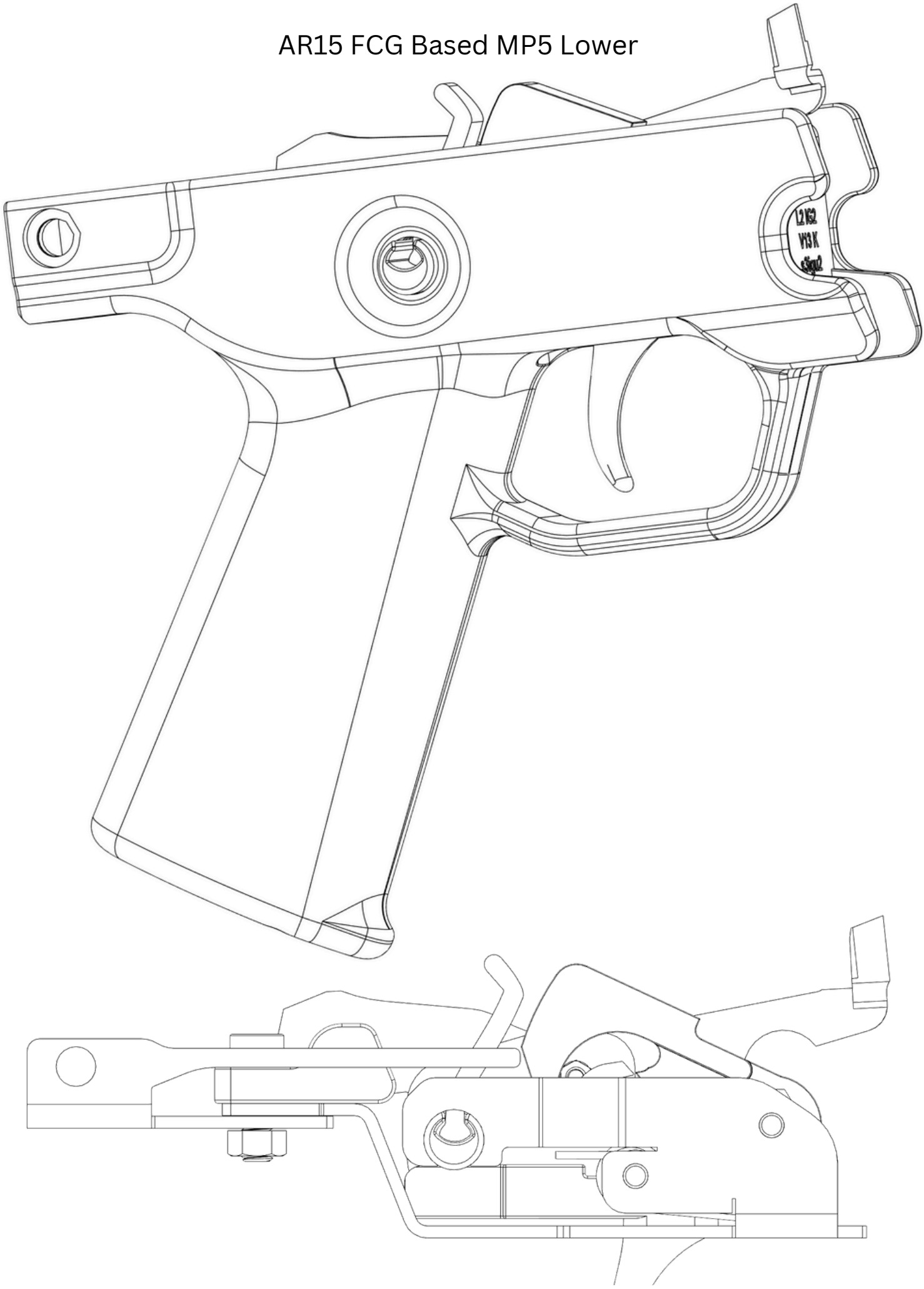
Leber V2

AR15 FCG Based MP5 Lower



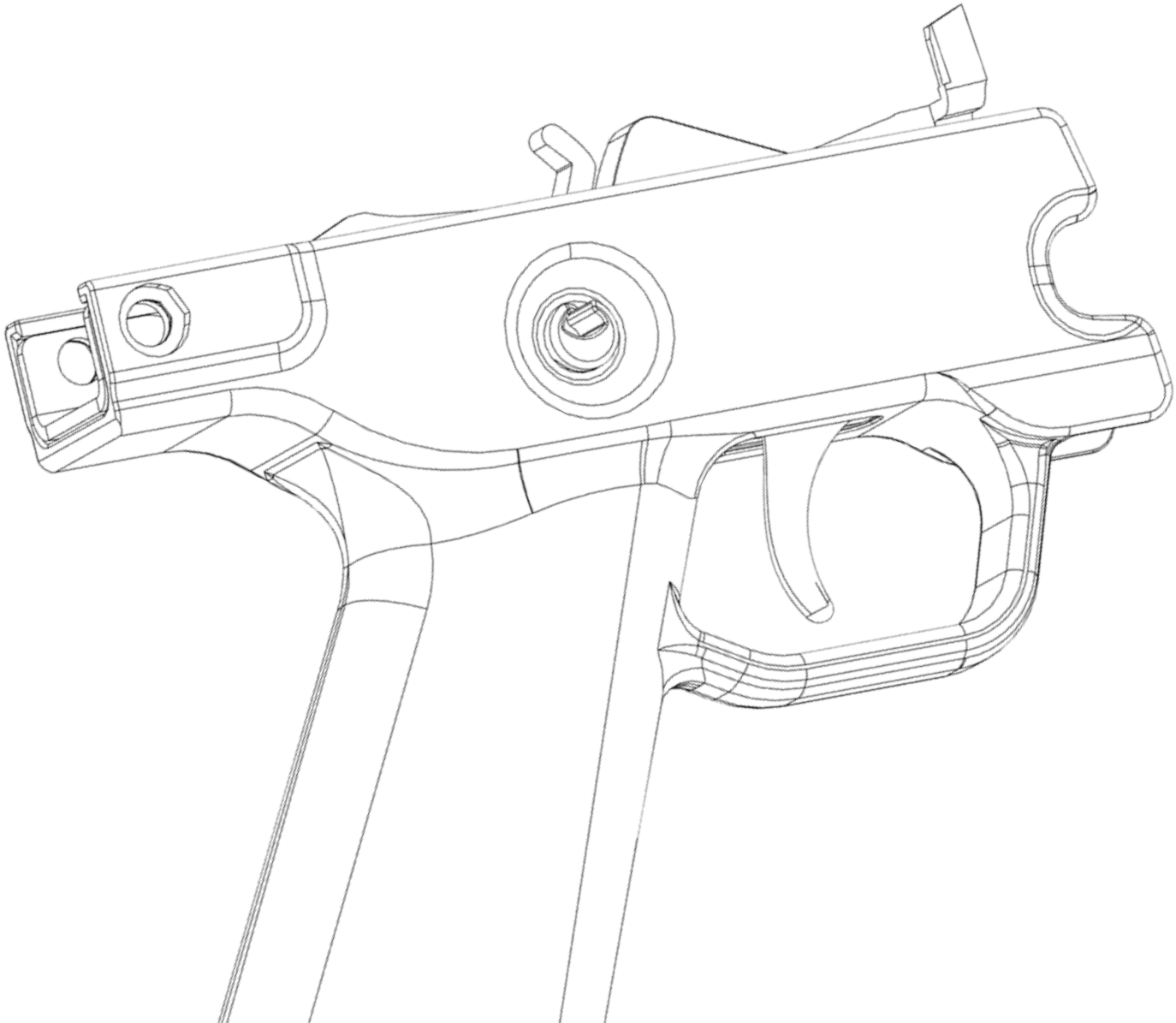
Description

The Leber V2 is an AR-15 Fire Control Group (FCG) trigger pack compatible with SP5, SP5K, AP5, and AP5-P. It uses bent sheet metal to retain the hammer, trigger, selector, and ejector.

The steel plates interface with the receiver at the front and back, removing all stress from the polymer external housing. These steel plates allow for a flush external polymer housing, giving the Leber V2 a more factory HK trigger pack appearance while also being much stronger. The lower also features a built-in grip option to mirror the factory HK trigger pack grip, which significantly improves durability.

Credit to @UberPoor on X/Odyssey for the ARMP5 V1 & V2, as the Leber V2 was heavily based on those early designs.

For those interested in supporting future projects, donations are greatly appreciated. Contributions can be made via Bitcoin to the following address:
bc1qz37yzsa6090alxd5zlulhm3ns38qjrmszcq2c5



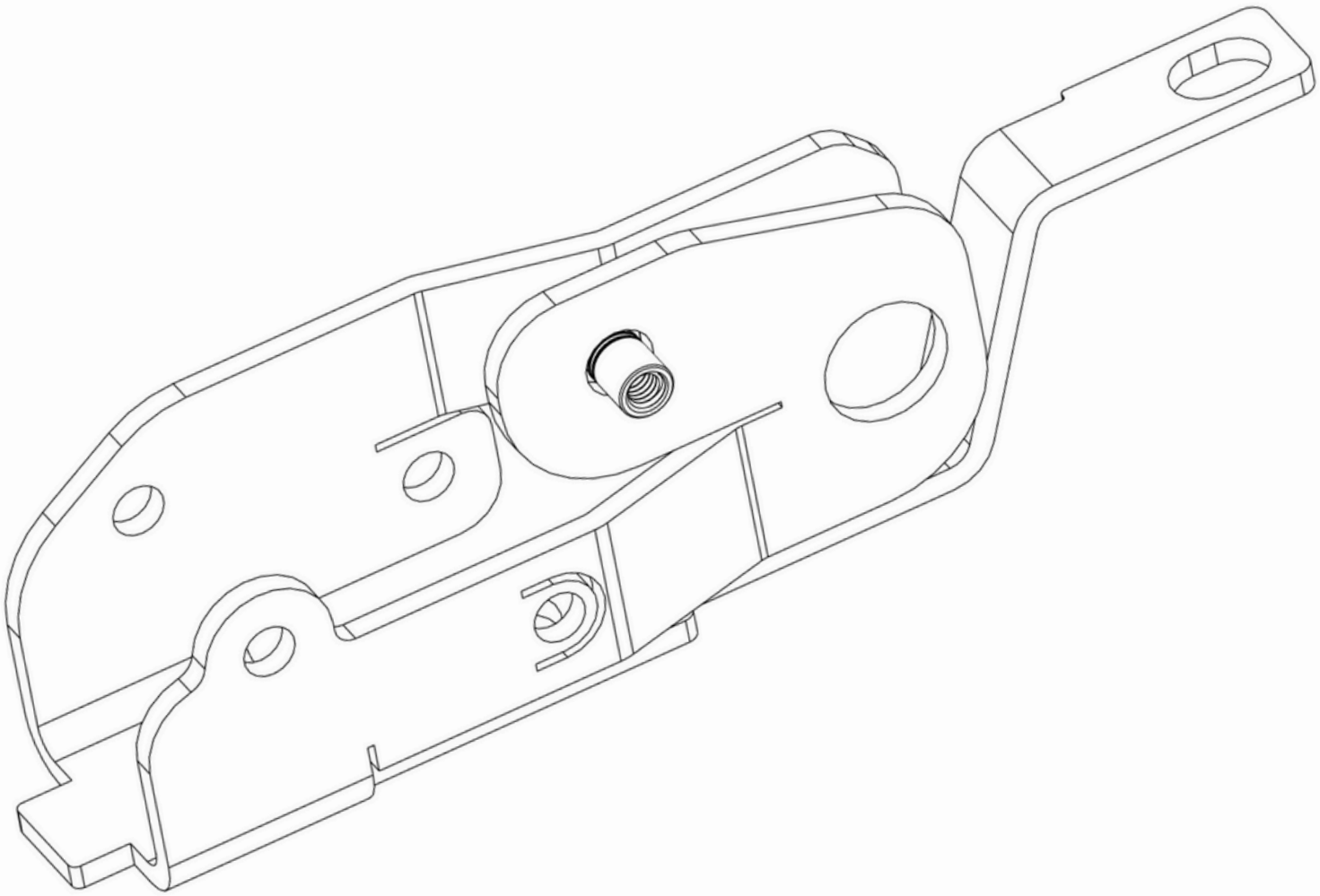
Send Cut Send Plate Disclaimer

SendCutSend, while a great service, isn't perfect and has a success rate of about 90% when it comes to bending and cutting the plates accurately.

Due to this, you need to understand that there is a chance you might receive a plate that is so far out of spec that it is not salvageable. Normally, they will replace the plate when this happens, but this is something you will want to be aware of.

I have spent a lot of money and time trying to ensure these plates can be made to fairly loose specs and still function, but sometimes they are just so far out of spec that there's not much you can do to save them.

Finally, it is also very important that you order the plates correctly. Due to the complexity of these plates, you need to ensure each bend is correct in the SCS interface, as well as make sure you have the standoff in the correct hole and facing the correct direction.



MP5 Ejection Guide

Failure to eject (FTE) is the most common issue that arises when using AR-15 FCG lowers. This is due to the added pressure of the AR-15 hammer and the force required to reset the super safety cam. Both of these require significant bolt carrier energy.

That said, this is an easy issue to fix as long as you know what to look for and are willing to spend a small amount of money on quality parts.

- **MP5 extractor spring:** The MP5 extractor spring is the weakest part of the MP5 design and can be easily damaged, resulting in FTE. I recommend replacing your bolt face with an RCM MP5-E bolt face or regularly checking your extractor spring stiffness.

- **Locking Piece:** The MP5 locking piece is the most common cause of FTEs. The lower the degree of the locking piece, the less bolt carrier energy is available, increasing the likelihood of FTEs. This issue can be resolved by using a locking piece with a higher degree (no higher than 100 degrees unless using 115-grain ammo). RCM locking pieces are recommended.

- **Ammo:** Using the wrong locking piece in combination with certain types of ammunition can result in FTE.

  Examples
  - 115-grain 9mm with a 90-degree locking piece and no suppressor attached will likely result in FTE on every shot. (Switch to a 100-degree locking piece.)

  - 124-grain 9mm with an 80-degree locking piece and no suppressor attached will likely result in occasional FTEs. (Switch to a 90-degree locking piece.)

- **AR-15 Hammer:** The AR-15 hammer requires more force to reset than the factory MP5 hammer. While this is perfectly functional, if you want to improve reliability with weaker ammo types, the Geissele SSA-E FCG is compatible with the Super Safe Leber V2 and is much easier on the bolt carrier. It also requires less force on the trigger, making resetting the cam easier as well. A reduced AR-15 hammer spring might also help; however, if you encounter light primer strikes, it may be too weak.

- **Ejector Lever:** This is one part you should never skimp on. Spend the money and buy a quality, genuine German GEN 3 ejector lever. This lower was designed around this ejector lever; using anything else is setting yourself up for failure.

Non Printed Parts List

Send cut send plates
- 1x Send Cut Send MAIN FCG Plate
- 1x Send Cut Send BACK Plate

Ejector & Ejector spacer
- 1x 6 mm OD, 4 mm Long 4.2 mm ID, Spacer McMaster Link
- 1x Factory German HK Ejector with the cut for the hammer
  (Using anything other then a HK ejector will not work)
- 1x German Ejector Spring (Optional but recommended to stop wobble)

Detent Set screw
- 1x Flat-Tip Set Screw 18-8, M5 x 0.8 mm, 12 mm Long McMaster Link

Plate Retaining
- 1x M5x20 Socket Head Screw
- 1x M5 Nut

Standard AR15 FCG

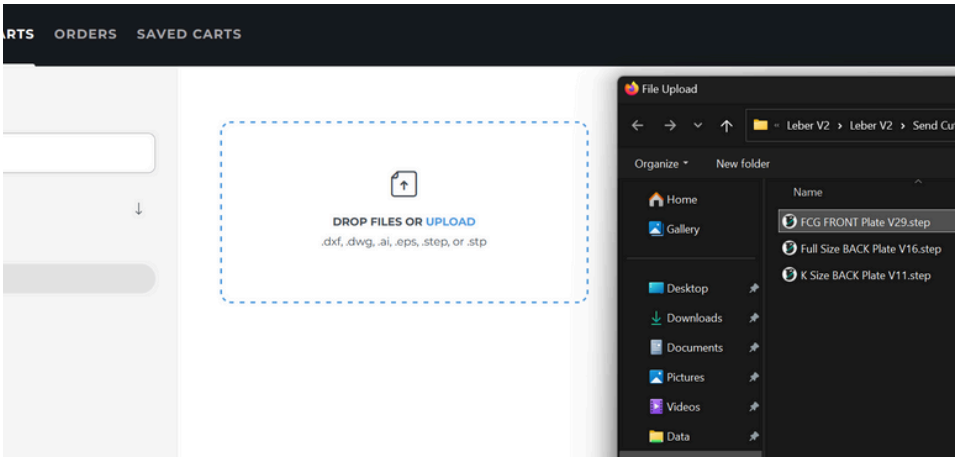
- Standard AR15 Hammer / **Heavy** Hammer Spring
- AR15 Trigger / Trigger Spring
- AR15 Disconnector / Disconnector spring
- AR15 Selector / Selector detent and spring
- Trigger Pins (A hammer and trigger pin)

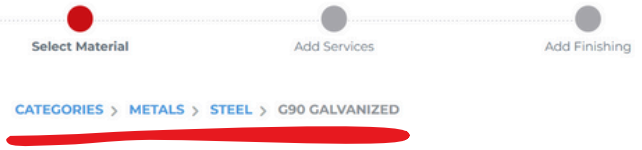
The Leber V2 was designed around a standard Hoffman-spec cut Super Safety trigger. This means no custom modifications are required for the Super Safety to function correctly. Any pre-cut trigger will also work properly with this lower, provided it has been cut to the correct specifications for AR-15s.

NOTE: Using non-standard hammers may change the buffer size needed. If you don't want to use a buffer, you will need to file your hammer so that the BCG cannot get stuck behind it.

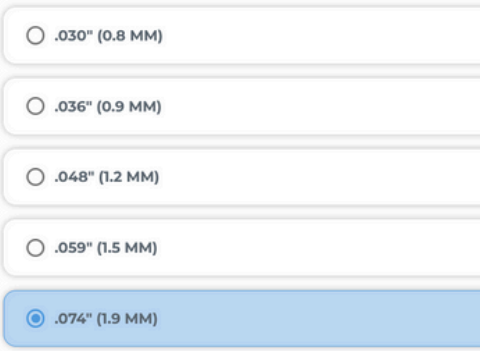
Ordering Send Cut Send Plates

- Start by uploading the SCS MAIN FCG Plate. Do not drag and drop the file; instead, click the upload button and select the file manually.

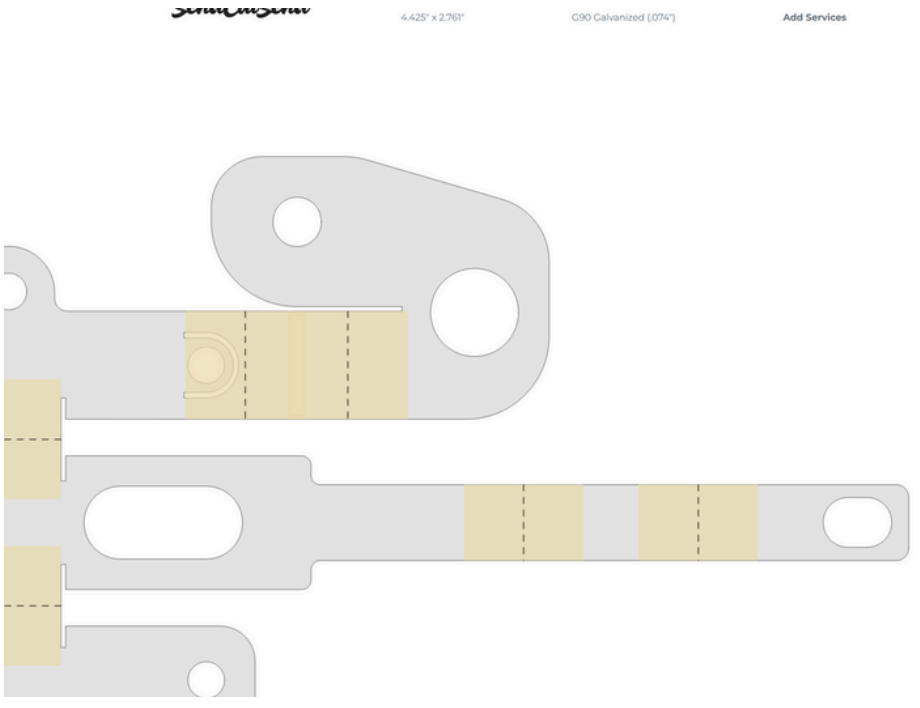


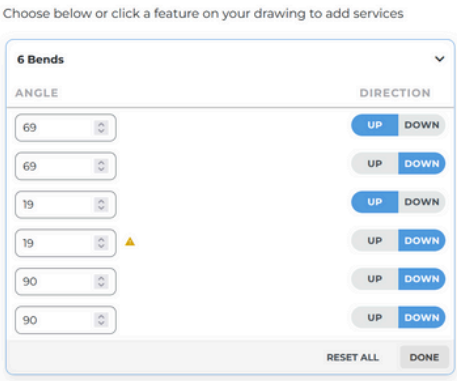


- Next, select the material by clicking (Metal > Steel > G90 Galvanized > .074" (1.9MM)). Ensure you select the correct thickness, as an incorrect selection will affect the part's fit or function. Once selected, click Done, and then proceed to Next.

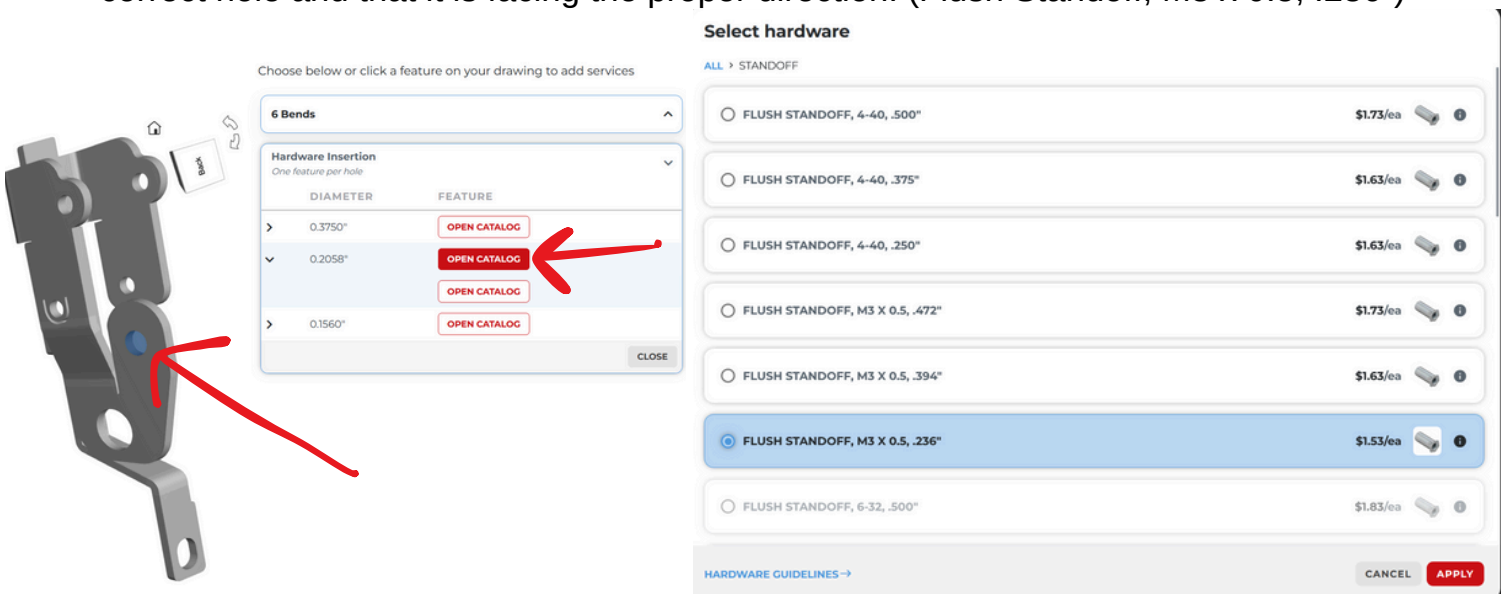


Now select the **Bend** tab on the **Add Services** page and verify that all your bends are correct. Ensure the 3D model matches mine (the yellow warning is normal). Once confirmed, click **Done**.

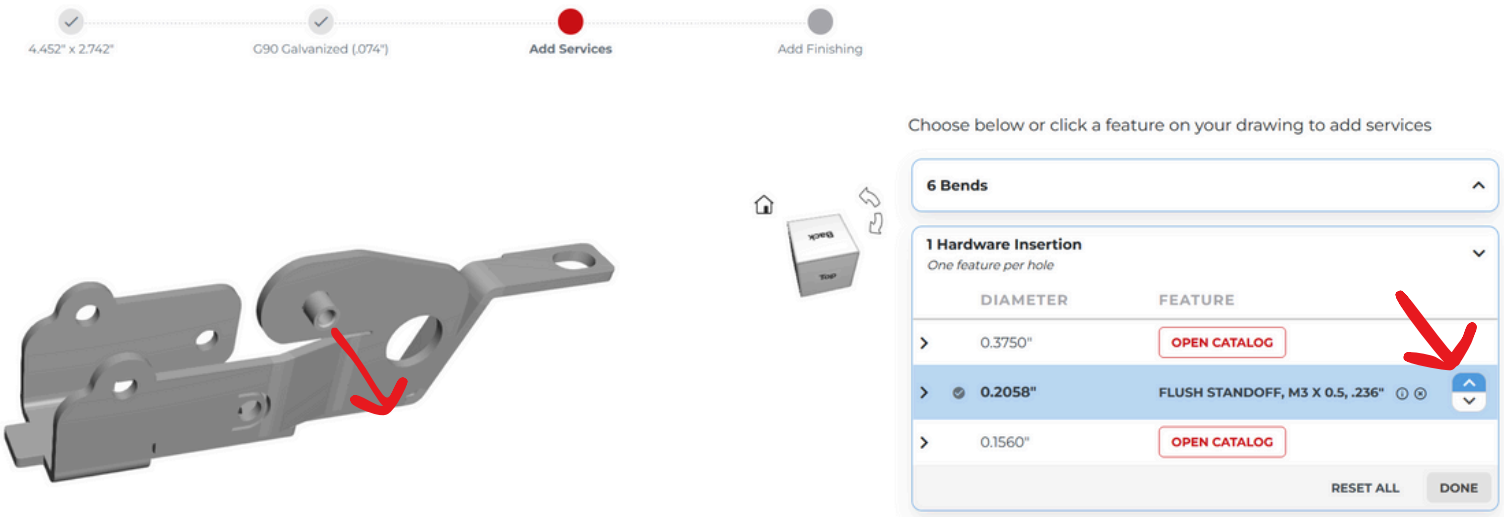




This step is the most commonly messed up, so ensure you select the correct standoff for the correct hole and that it is facing the proper direction. (Flush Standoff, M3 x 0.5, .236")

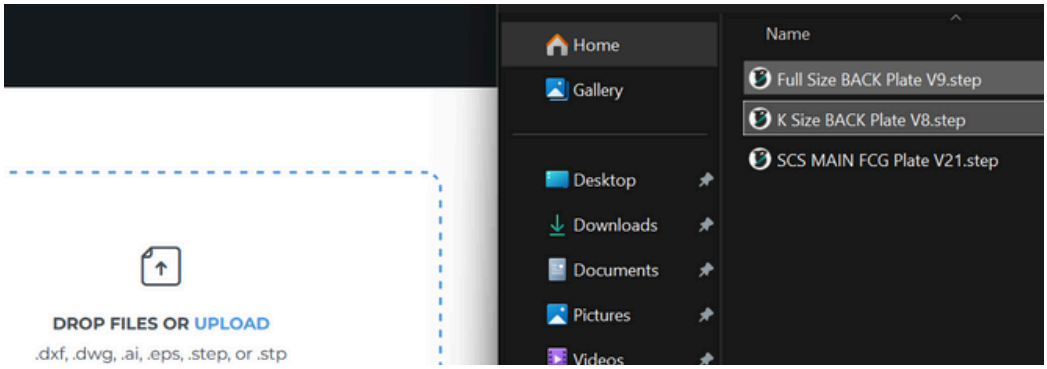


After clicking "Apply," you might notice that the standoff is facing the wrong direction. Be sure to click the arrow to adjust it so that the standoff faces outward from the FCG. Refer to the image below for guidance. The menu will lag be patient.

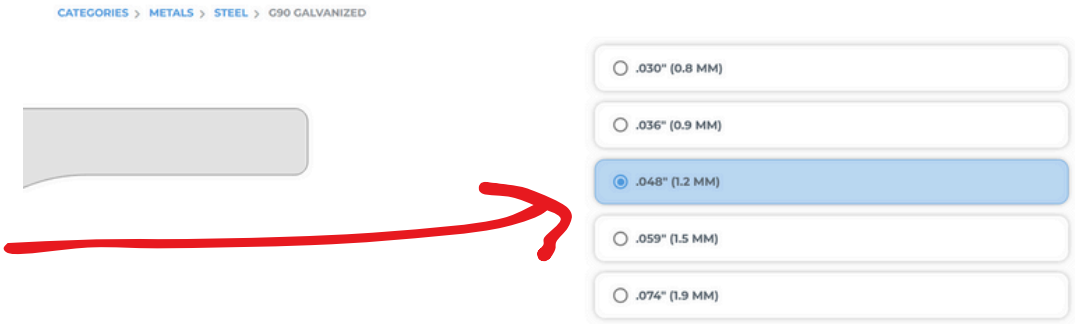


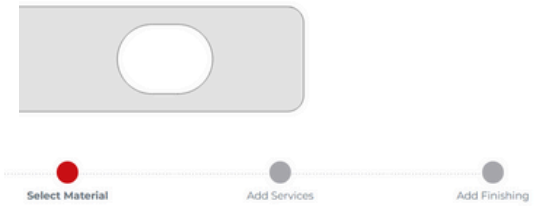
This is what the finished part should look like. Carefully review the 3D model now to ensure it matches mine. Send me a picture like this and i will verify if you did it correctly.

- Now, for the back plate, select either Full Size or K Size, depending on whether you have a full-size MP5 or a K model.

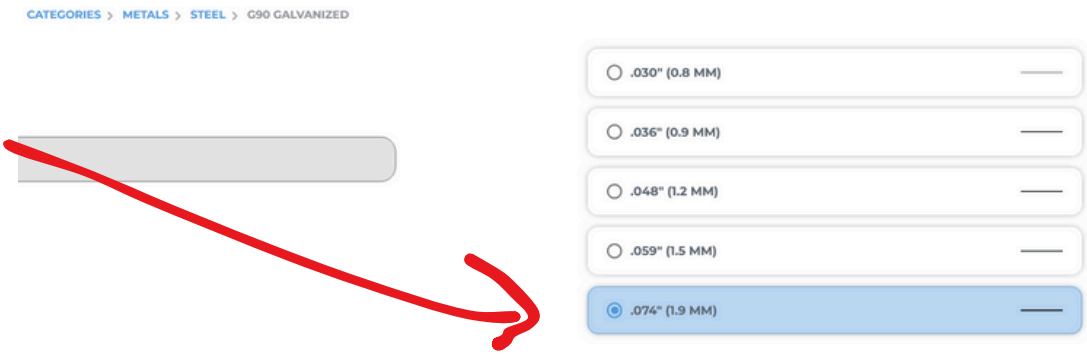


- For the **Full Size** Back Plate, **Make sure** to select **.048" (1.2MM)**. Then click Done and proceed to Next.

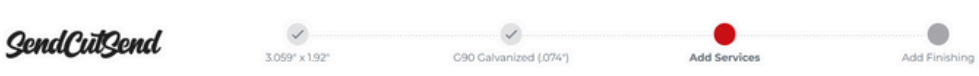


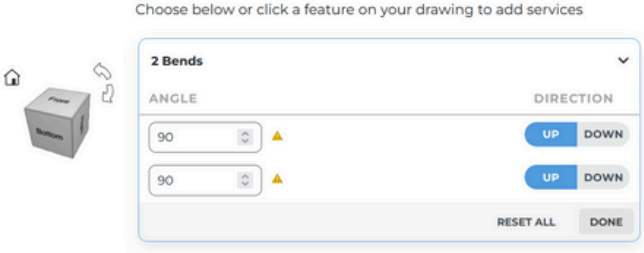


- For the **K Size** back plate, make sure to select **.074" (1.9MM)**. Then click Done and proceed to Next.



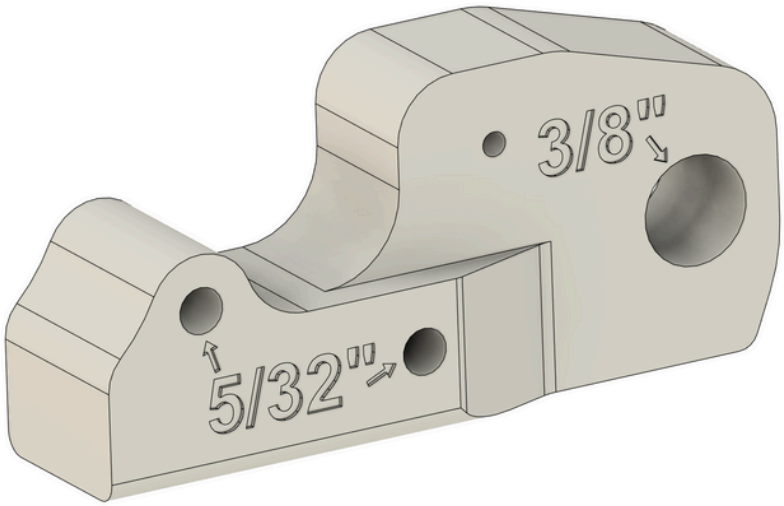
For both plates, the correct bend angle is 90 degrees. You may see two yellow warnings, but this is normal. Ensure both bends are facing the same direction.



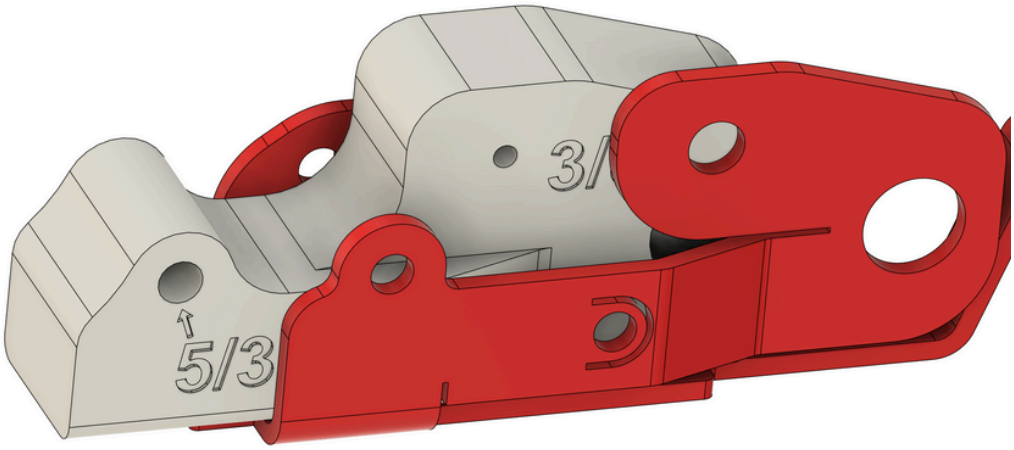


Send Cut Send Plate QC Check

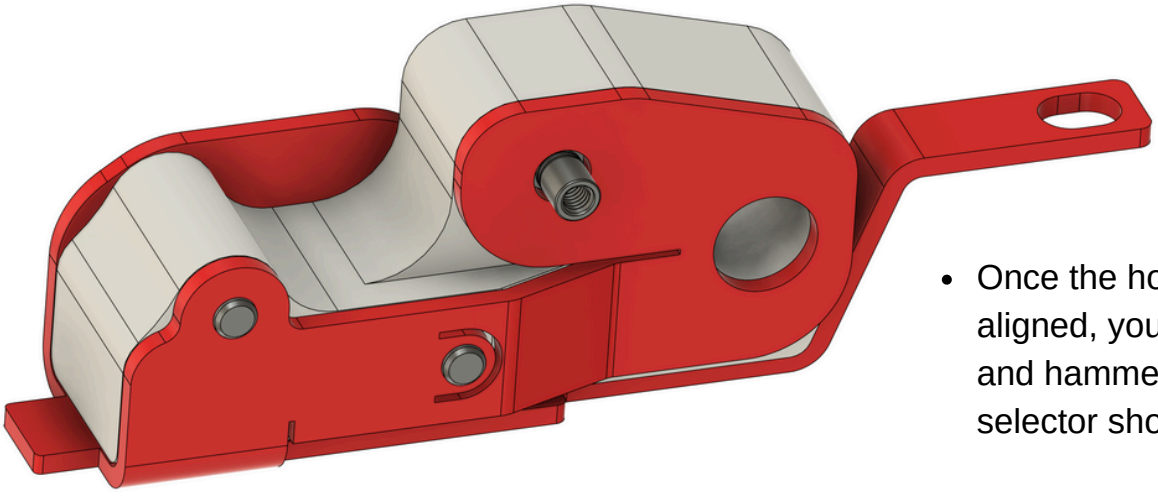
Due to the complexity of the FCG plate and the potential for SendCutSend to occasionally produce out-of-spec parts, this printable jig is provided to check and verify that the plate are in spec.



- You can print the QC jig at 0.15mm layer height. You might need to drill the selector and trigger / hammer pin holes out.



- The jig can be inserted from the front; it may be a tight fit, but if it does not fully seat, the FCG plate is out of spec.



- Once the holes are properly aligned, you can insert the trigger and hammer pins, and the selector should slide in smoothly.

Print settings and orientation

All STL files are oriented correctly and include built-in supports where necessary. The built-in supports can be separated in the slicer and printed with a lower infill to reduce material usage, if desired. (STEP files are not oriented correctly.)

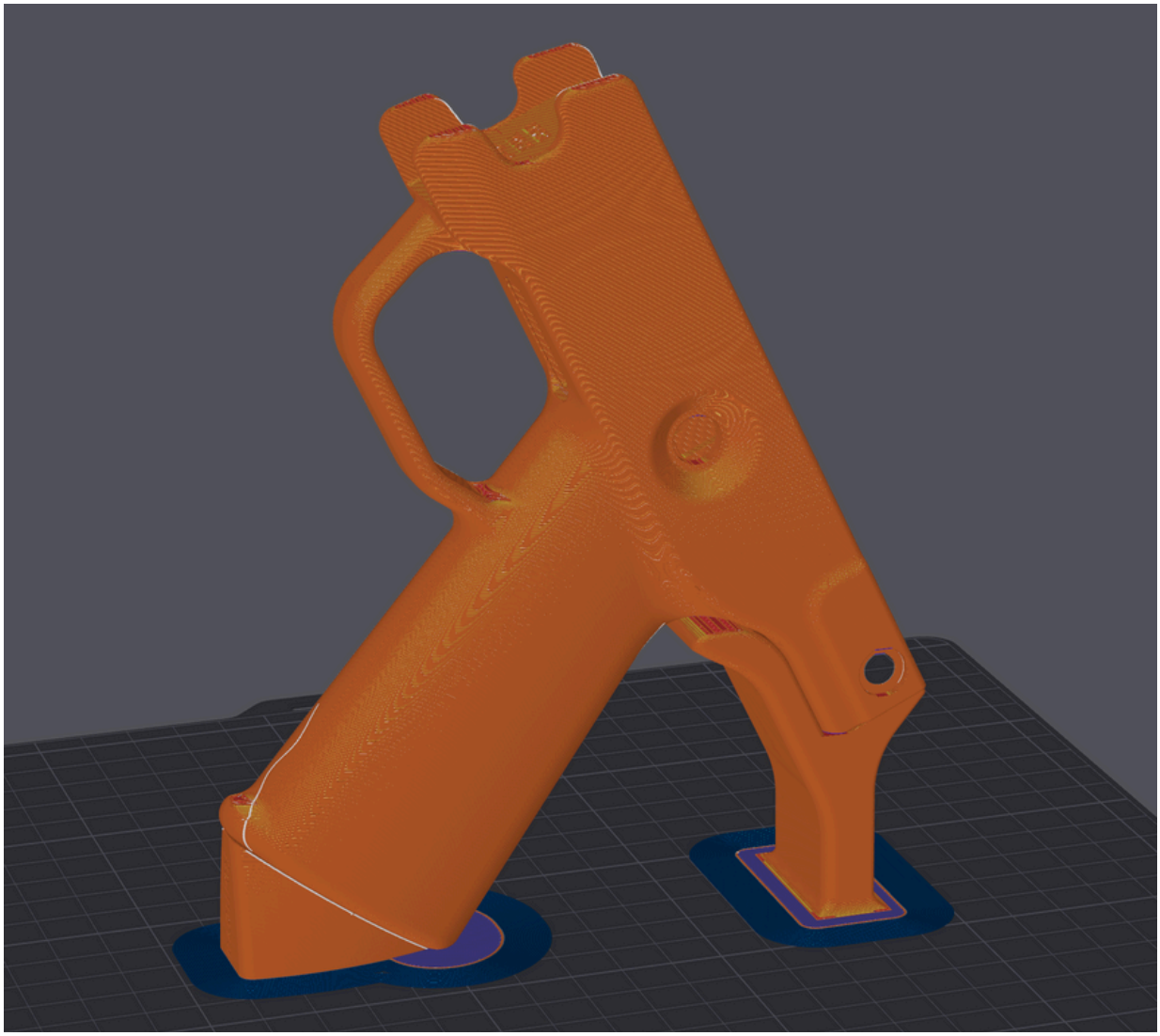
Ensure that your printer is calibrated for the filament you are using, as failure to do so may result in the plates fitting too tightly. It is also crucial to follow the settings below to ensure proper fitment and to guarantee that the built-in supports function correctly.

- Temp: 220/60C (Polymaker PLA Pro)
- Nozzle: 0.4mm

- First Layer Height - 0.20 (Or 0.15)
- Layer Height - 0.15

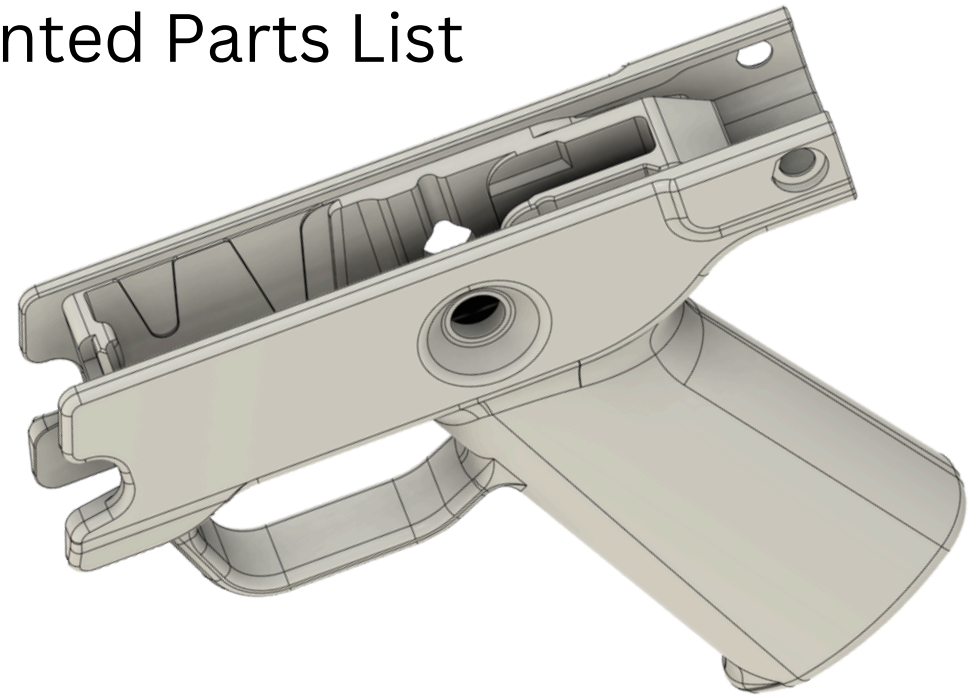
- Wall Loops - 8 Walls Max
- Infill - 100% Rectilinear

For nylon printing, see my guide on Odysee @s3igu2 for Polymaker PA6-CF.

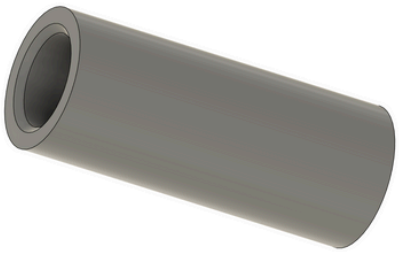


Printed Parts List

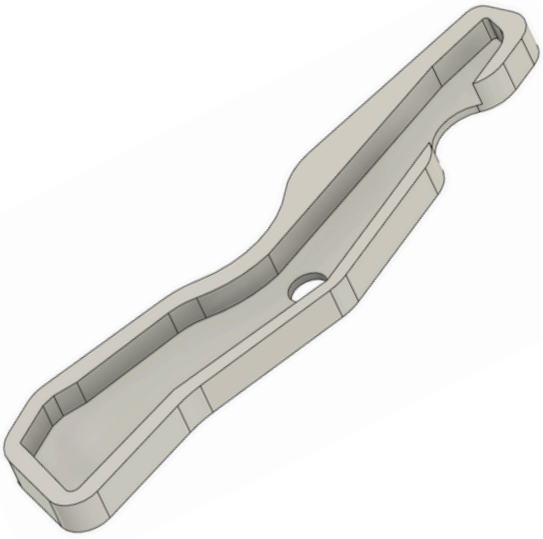
- For the housing, you will need either the K or full-size housing. Make sure to pick the correct housing, as they both look very similar.



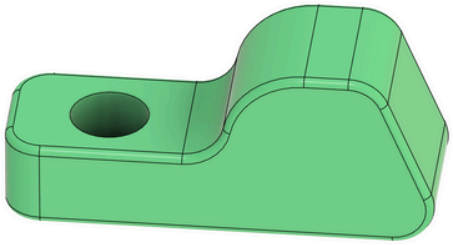
- (FULL SIZE MP5 ONLY) Next, you need a 48mm TPU buffer to prevent the BCG from slipping behind the AR-15 hammer and getting stuck. The only situation where you don’t need the buffer is when using a full-auto sear with a true full-auto FCG, or if you cut your hammer to avoid needing this buffer. (Print in TPU95A 100% Infill)



- The ejector cutting jig is used to cut the ejector in such a way that the hammer no longer stops it from going flush. Improperly cutting the ejector will cause various issues, primarily preventing the charging handle from being pulled back.

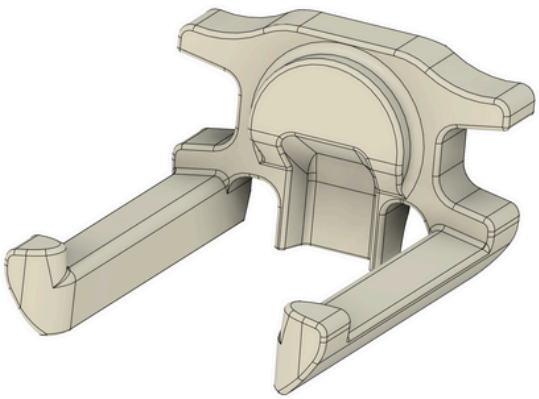


- The Super Safe Ramp prevents the lever from dropping below the reach of the slip trip. Even if you aren't using the super safety, you will still need this ramp unless you use a shorter M5 screw.



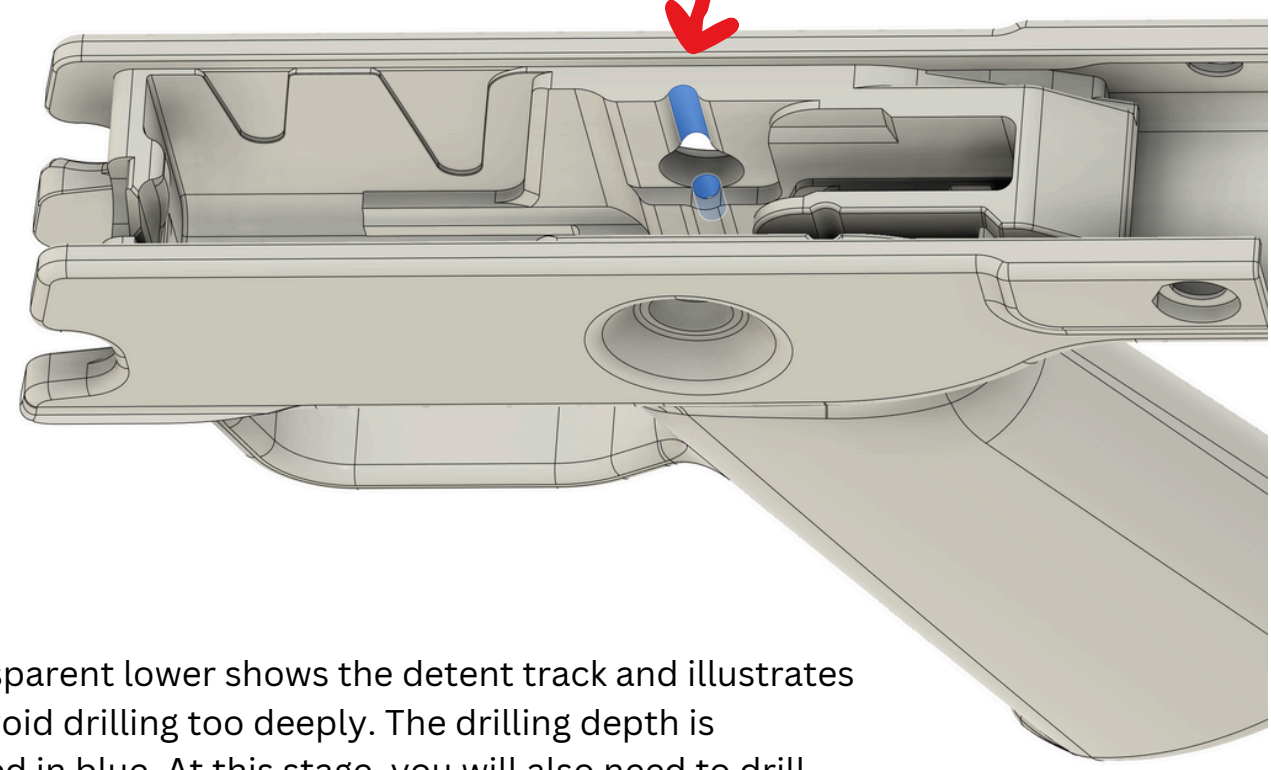
- The selector detent extender bar goes into the detent track after the detent and detent spring, filling the gap so the set screw can apply pressure to the detent spring correctly.

- The Slip Trip is required for the Super Safety to function with this lower. If you do not plan to use the Super Safety, then you will not need the Slip Trip. You can download the latest version of the Slip Trip on my Odysee. https://odysee.com/@S3igu2

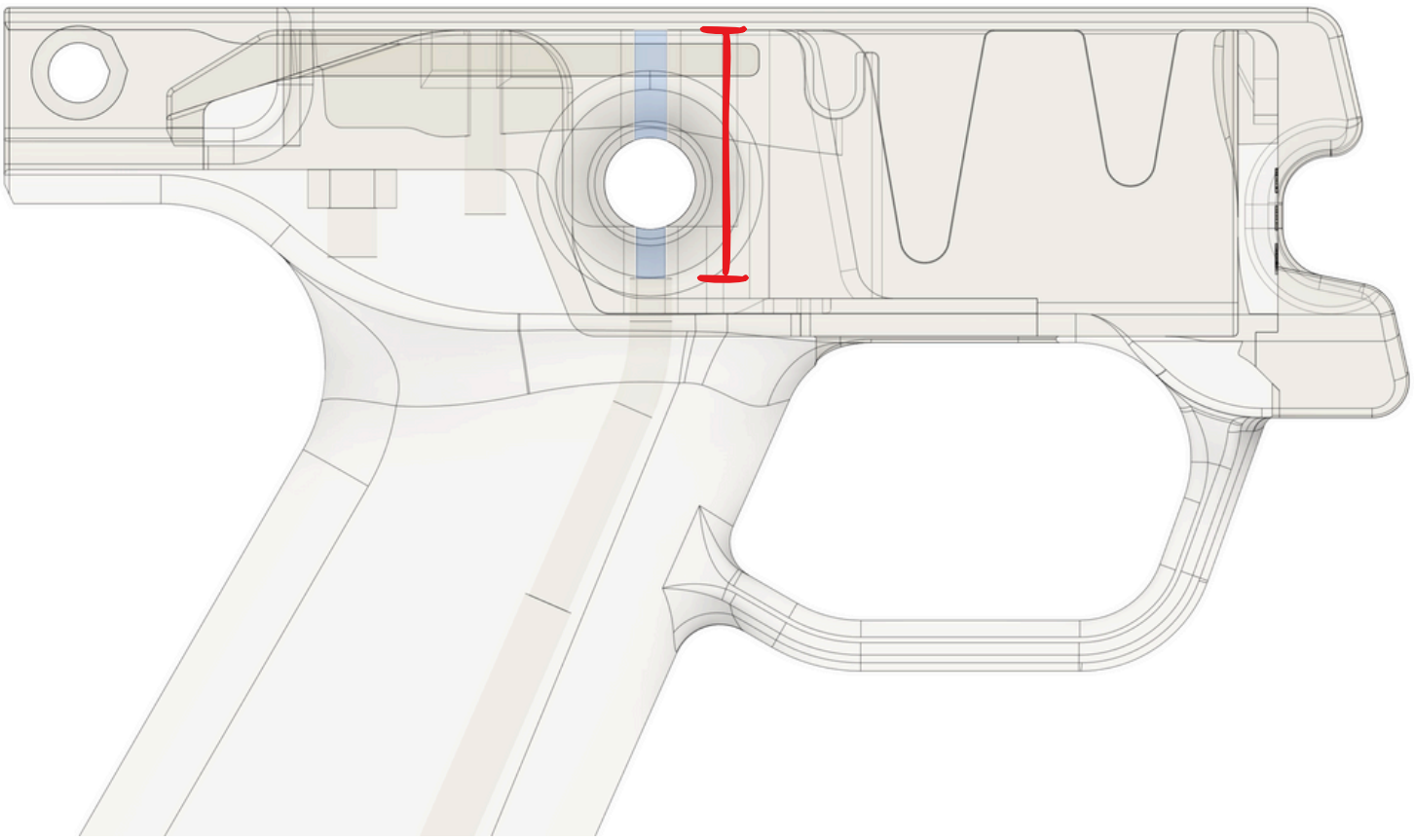


Drilling the selector and detent hole

- Using a 1/8-inch drill bit, drill this hole from the top of the lower. Make sure you don't drill too far into the detent track. You should only be drilling about 6mm deep into the hole.

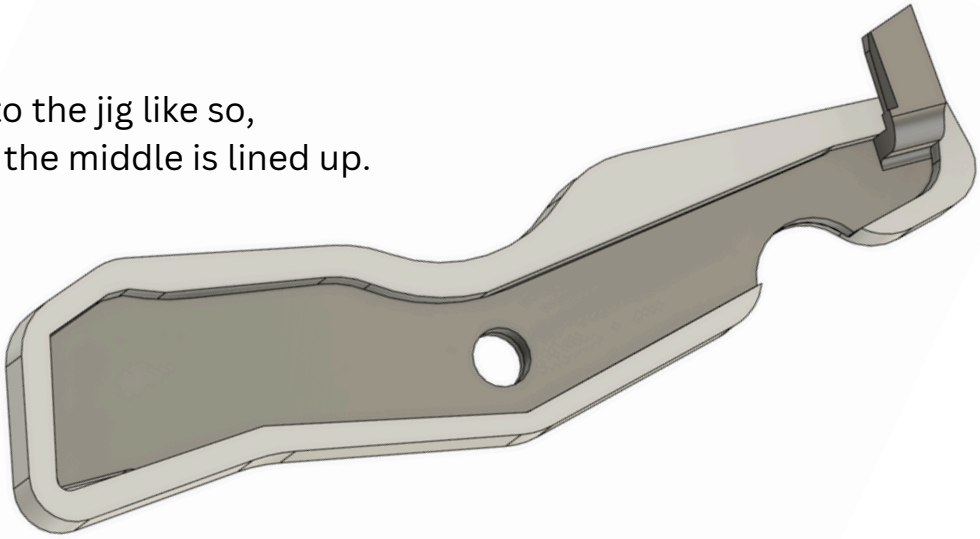


- This transparent lower shows the detent track and illustrates how to avoid drilling too deeply. The drilling depth is highlighted in blue. At this stage, you will also need to drill the selector hole to 3/8 inch.

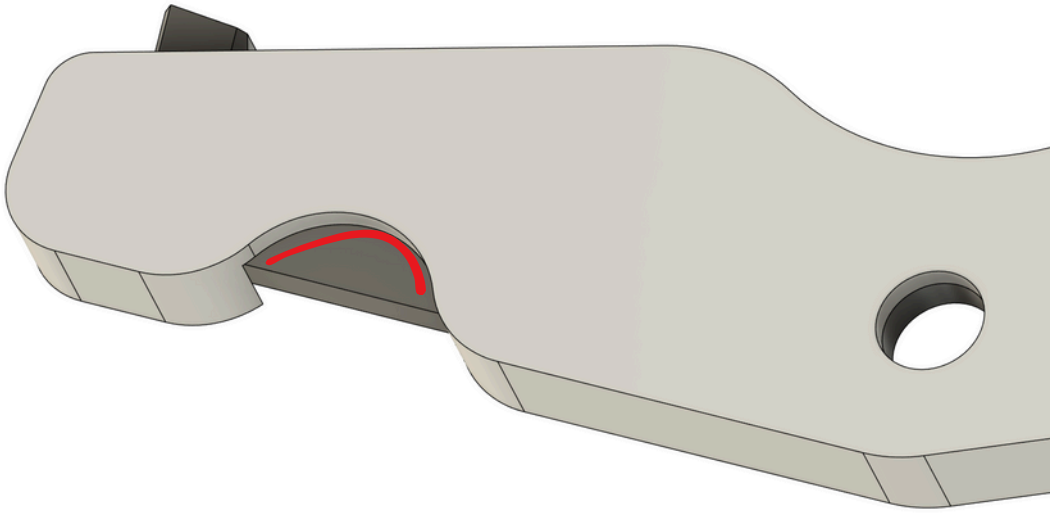


Ejector Cutting Jig Guide

- Place the ejector into the jig like so, ensuring the hole in the middle is lined up.



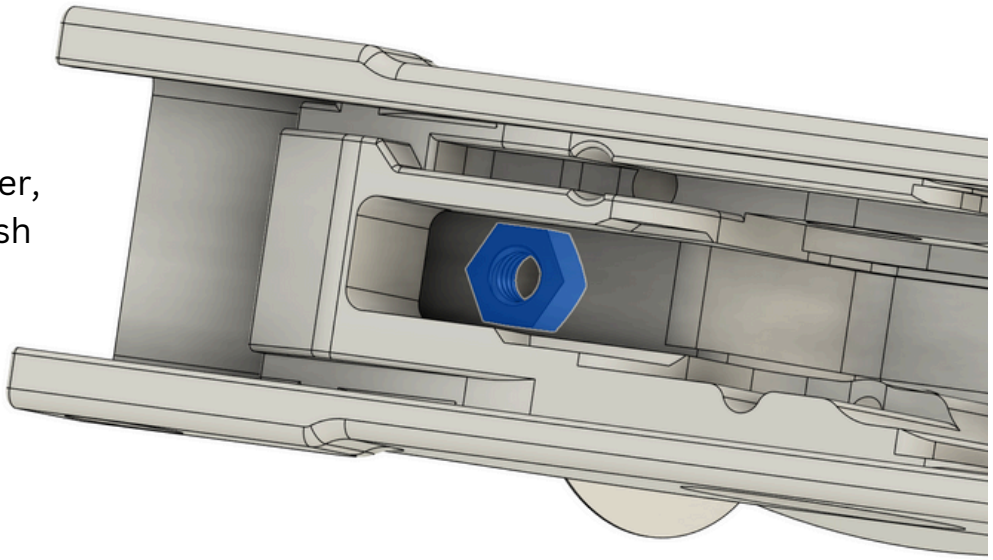
- Mark the ejector with a Sharpie then remove the ejector from the jig. Cutting it with the jig on works, but it will melt the jig pretty quickly.



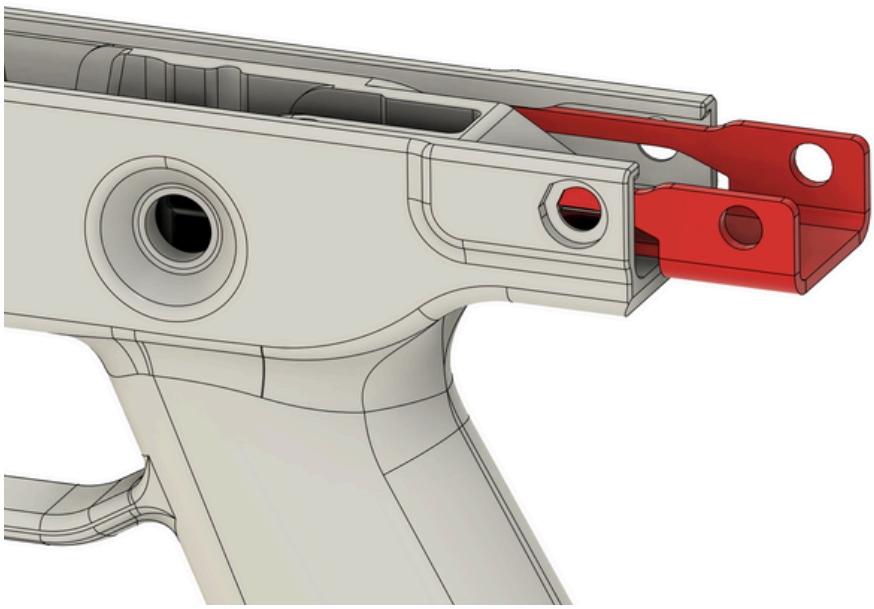
- Cut the ejector where marked with a Dremel or another tool, ensuring you end up with a cut like this. You can also sand and smooth the edges to make sure everything fits properly.

Nut, Rear plate and Ejector spring install

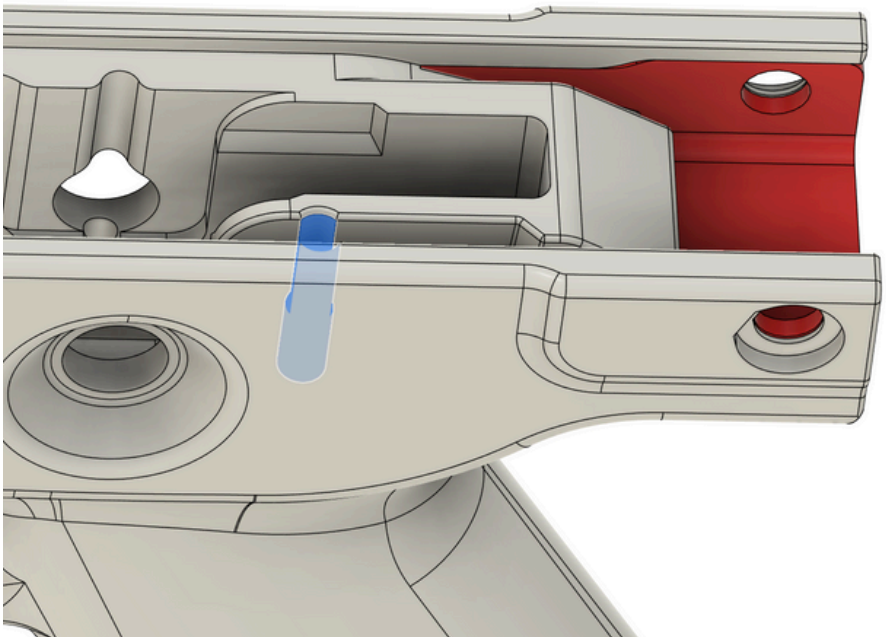
- Install the M5 nut into the cutout at the back of the lower, ensuring the nut is sitting flush and not sticking up.



- Now, slide the back plate in. The K plate should sit flush with the back wall. The plates may need to be adjusted to align with the pin hole. Use a rubber mallet if the plates are too tight. If they still won’t go in, then your print settings are likely off.

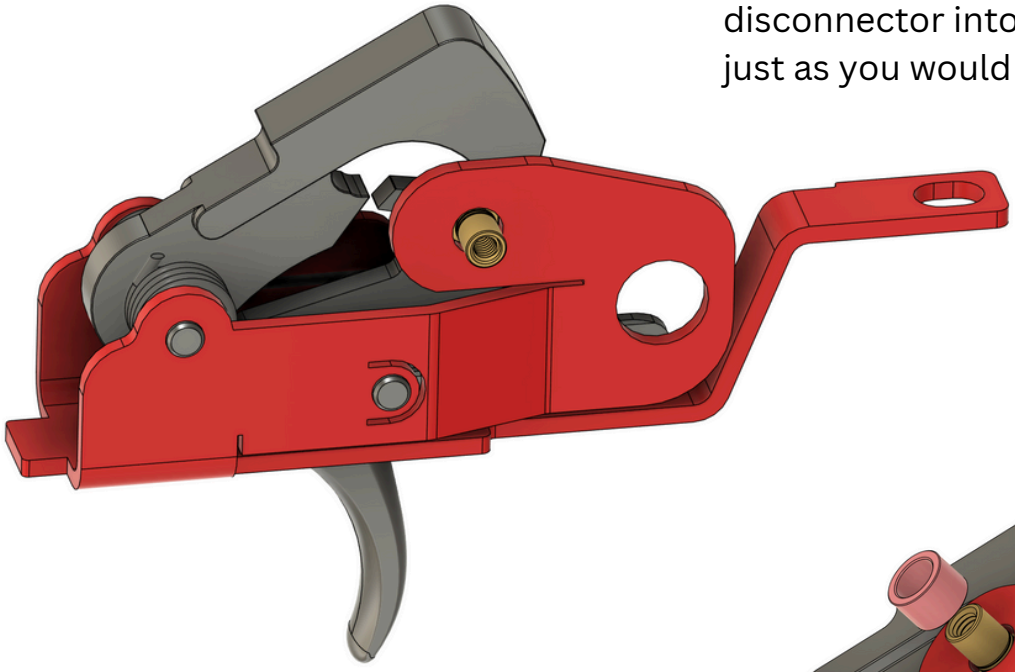


- Install the ejector spring into the hole highlighted in blue. The spring should drop in easily; if it doesn't, make sure nothing is blocking it in the hole.



Main SCS Plate Assembly

- Install the hammer, trigger, and disconnector into the main SCS plate, just as you would in a normal lower.

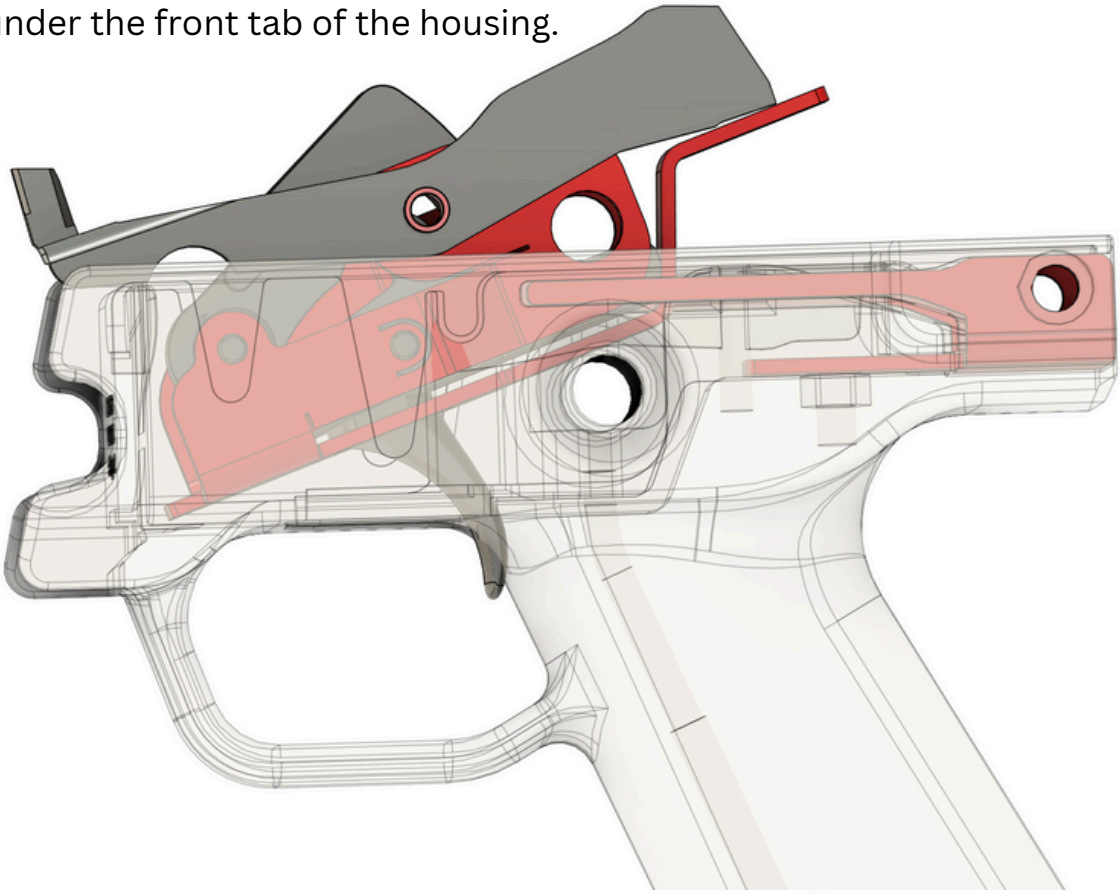


- Now, install the spacer onto the standoff, and then place the ejector onto the spacer. The FCG is now ready to be installed into the housing.

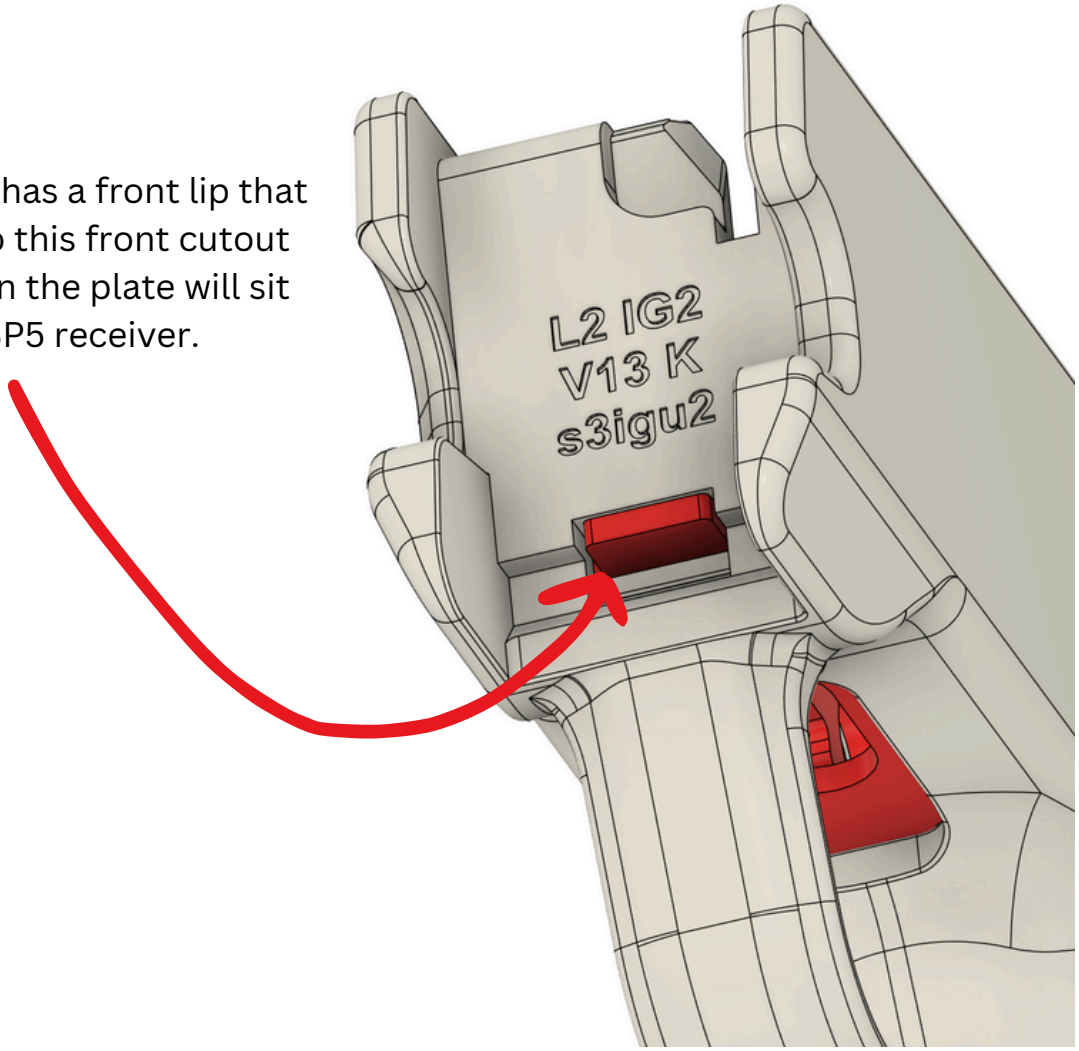
- The ejector will be loose on the plate, so make sure to hold both the ejector and spacer in place until it's in the housing.

Main SCS Plate Install

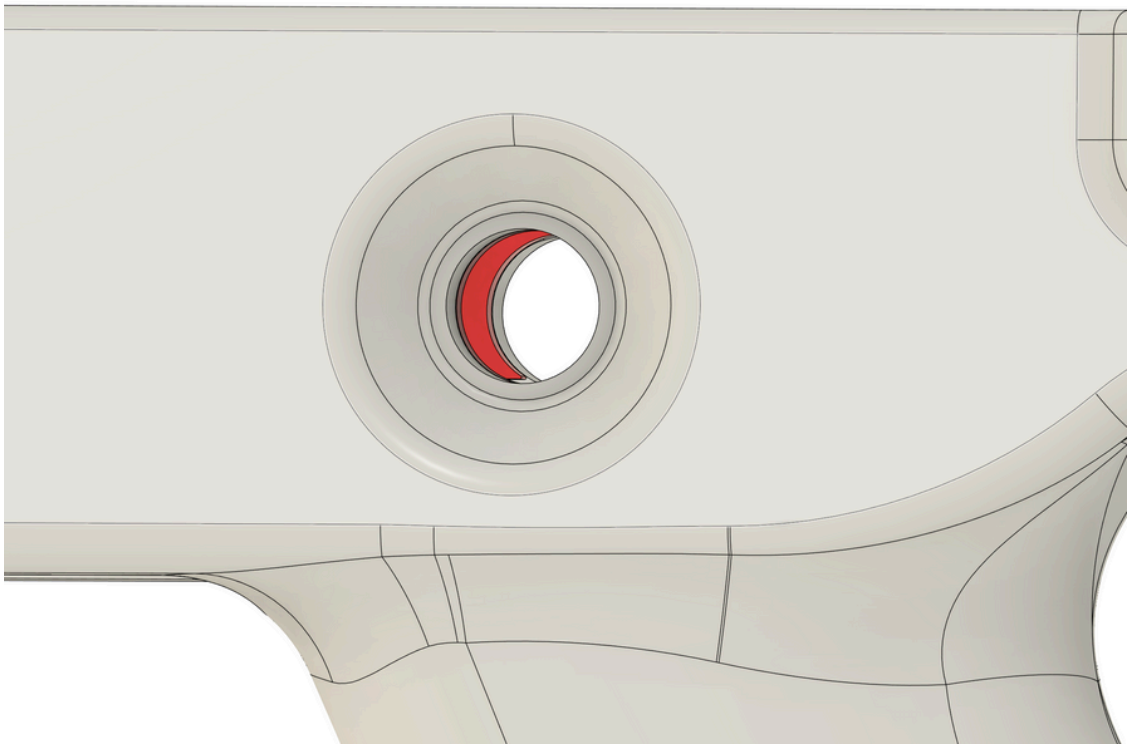
- While holding the ejector onto the plate, insert the front of the main SCS plate into the housing first, allowing it to slide under the front tab of the housing.



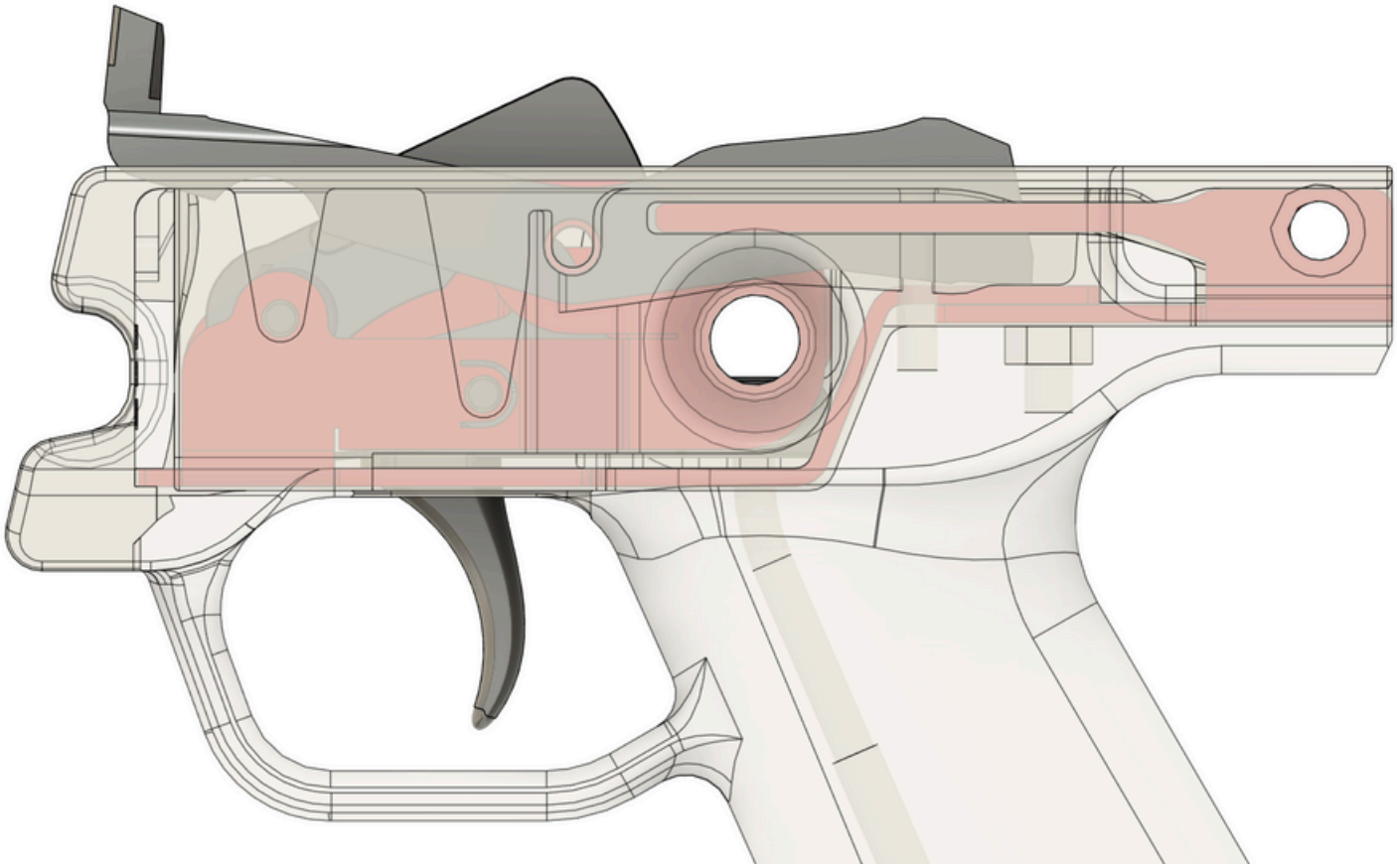
- The main FCG plate has a front lip that needs to be slid into this front cutout first. This front lip on the plate will sit on the shelf of the SP5 receiver.



- The most common area to be out of spec with the main send cut-send plate is the selector hole. It should line up almost perfectly with the selector hole in the housing. If you notice the selector won't go in, make sure to push the FCG forward or backward so the plate lines up with this hole.

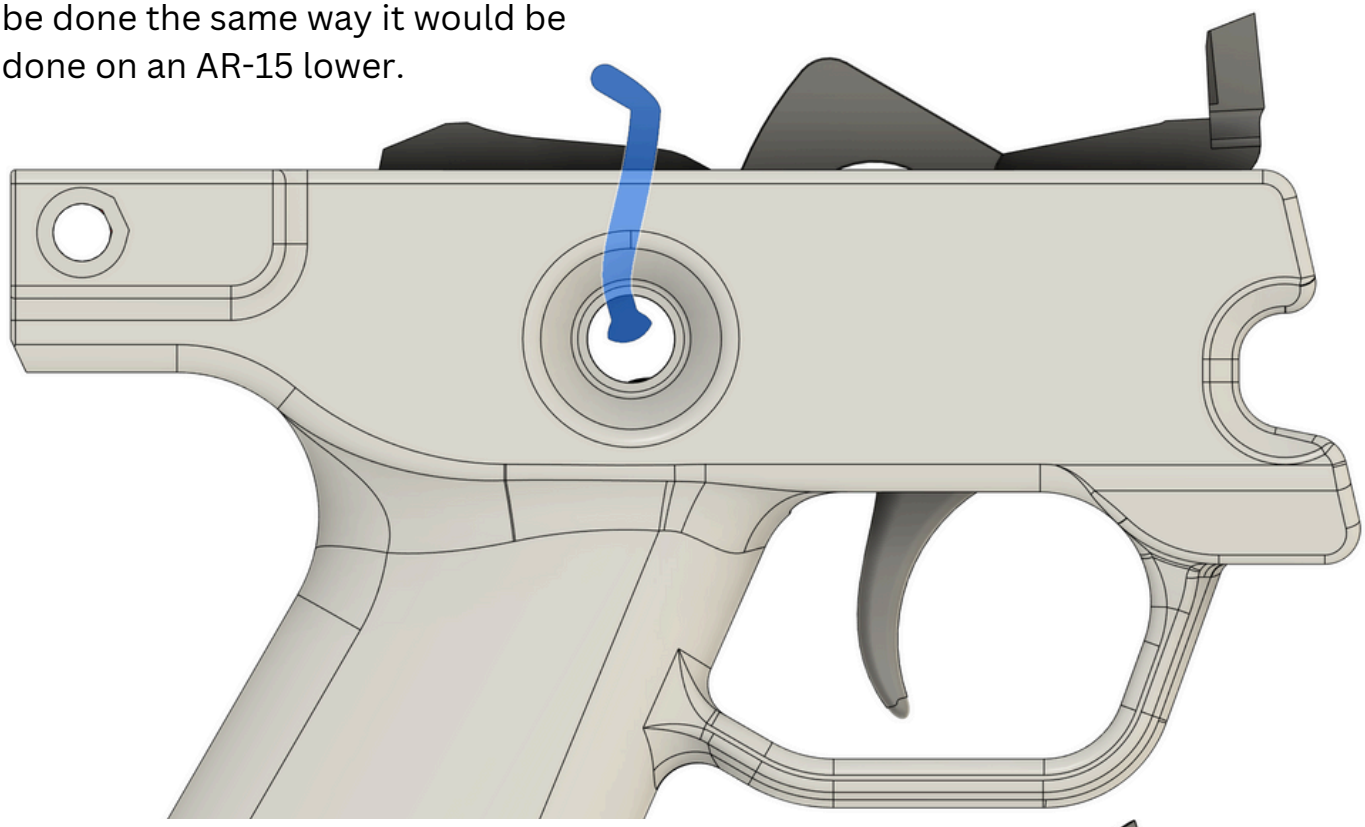


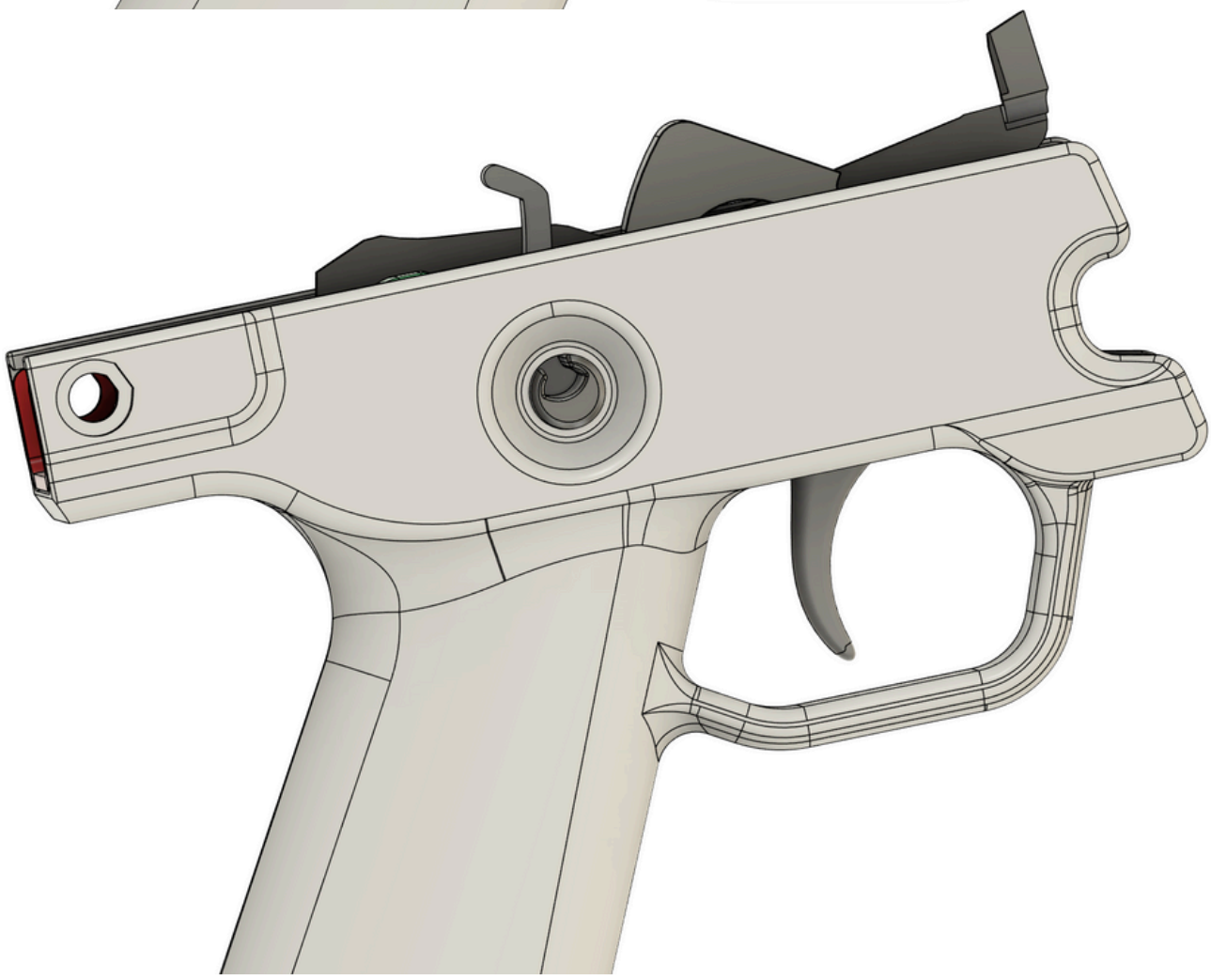
- You will need to push it down and forward; eventually, it will snap into place. This might take a bit of practice, but it should be fairly easy once you get the motion down.



Selector Install

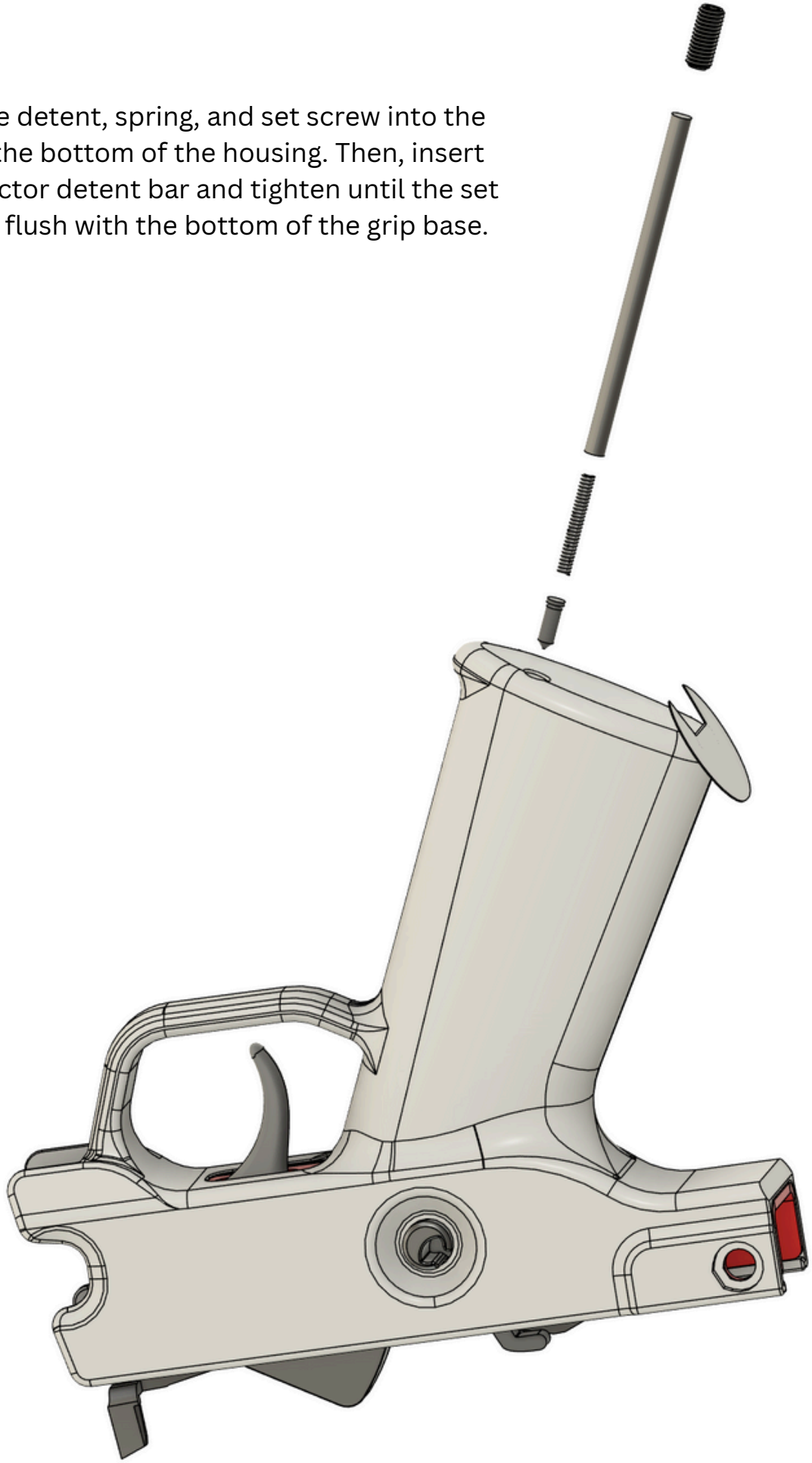
- Now, install your selector. This should be done the same way it would be done on an AR-15 lower.





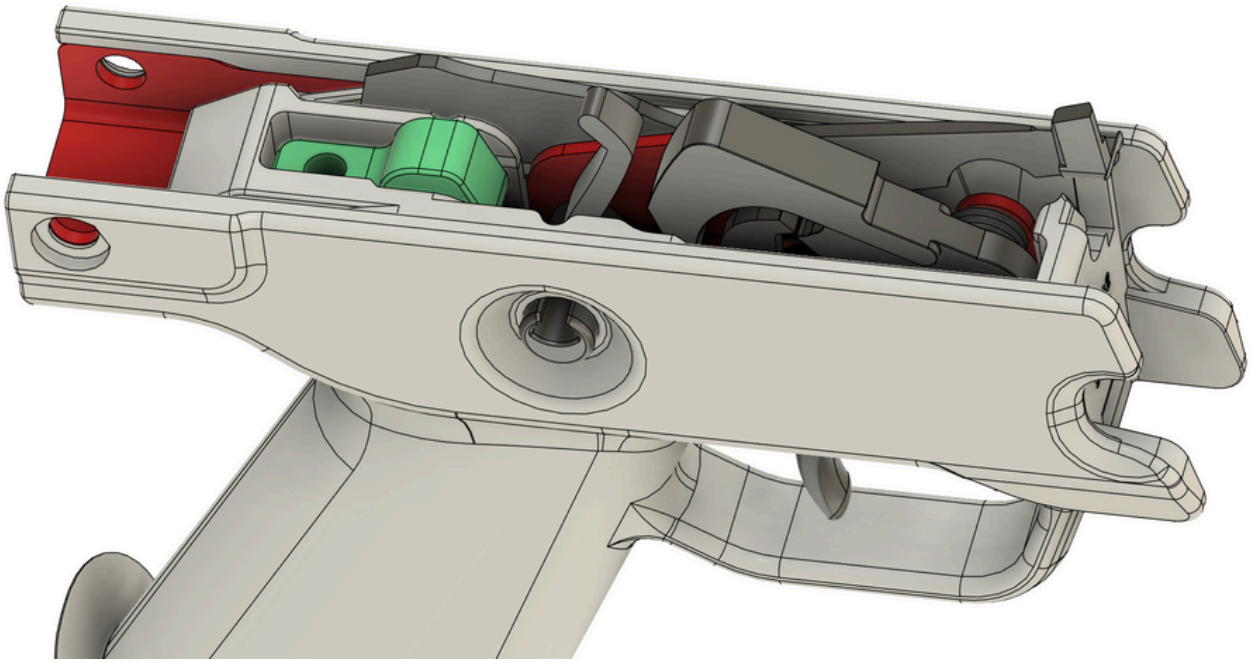
Selector Detent Install

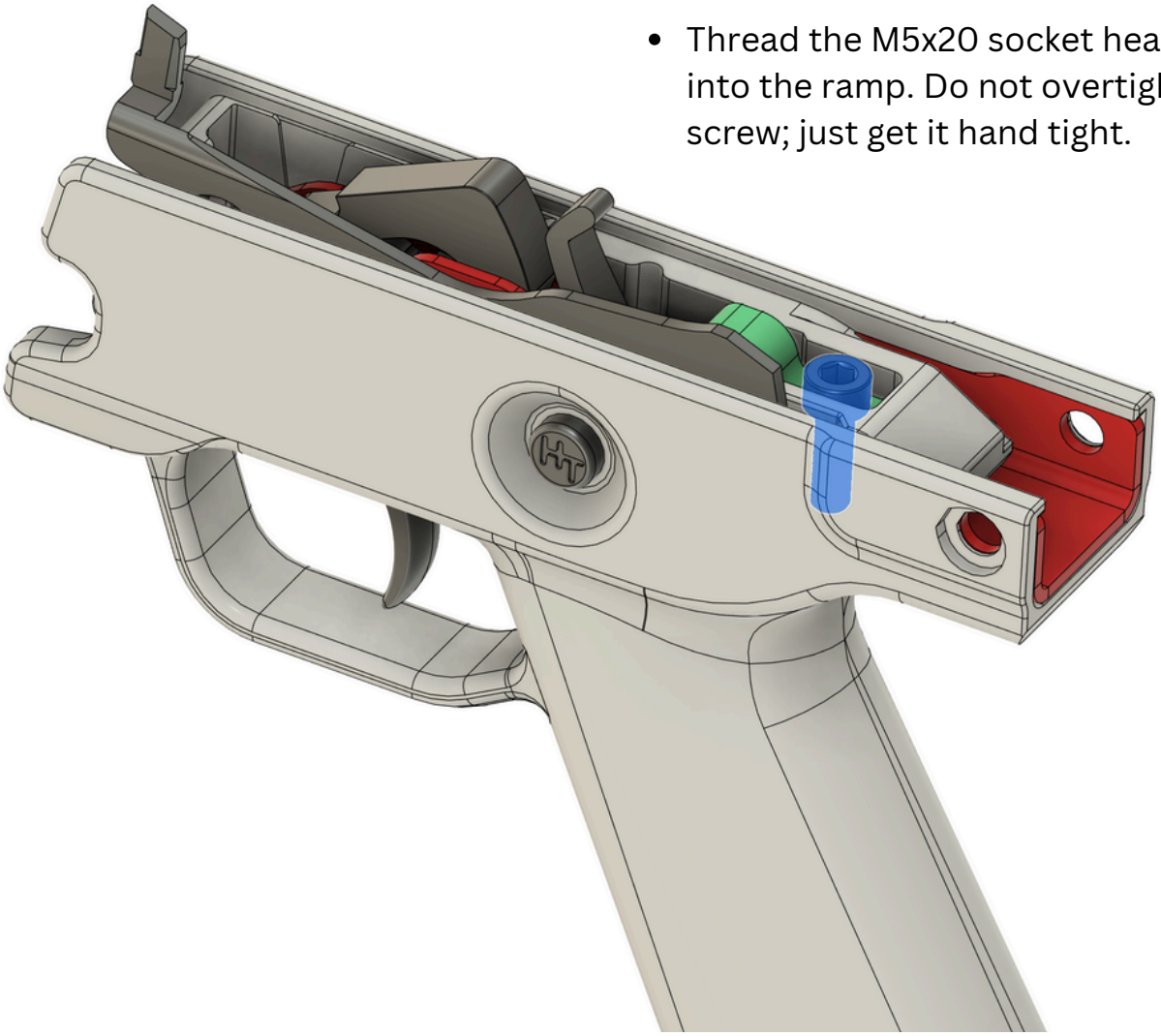
- Drop the detent, spring, and set screw into the hole at the bottom of the housing. Then, insert the selector detent bar and tighten until the set screw is flush with the bottom of the grip base.



Ramp and M5 Screw install

- Place the ramp into the cutout of the housing.

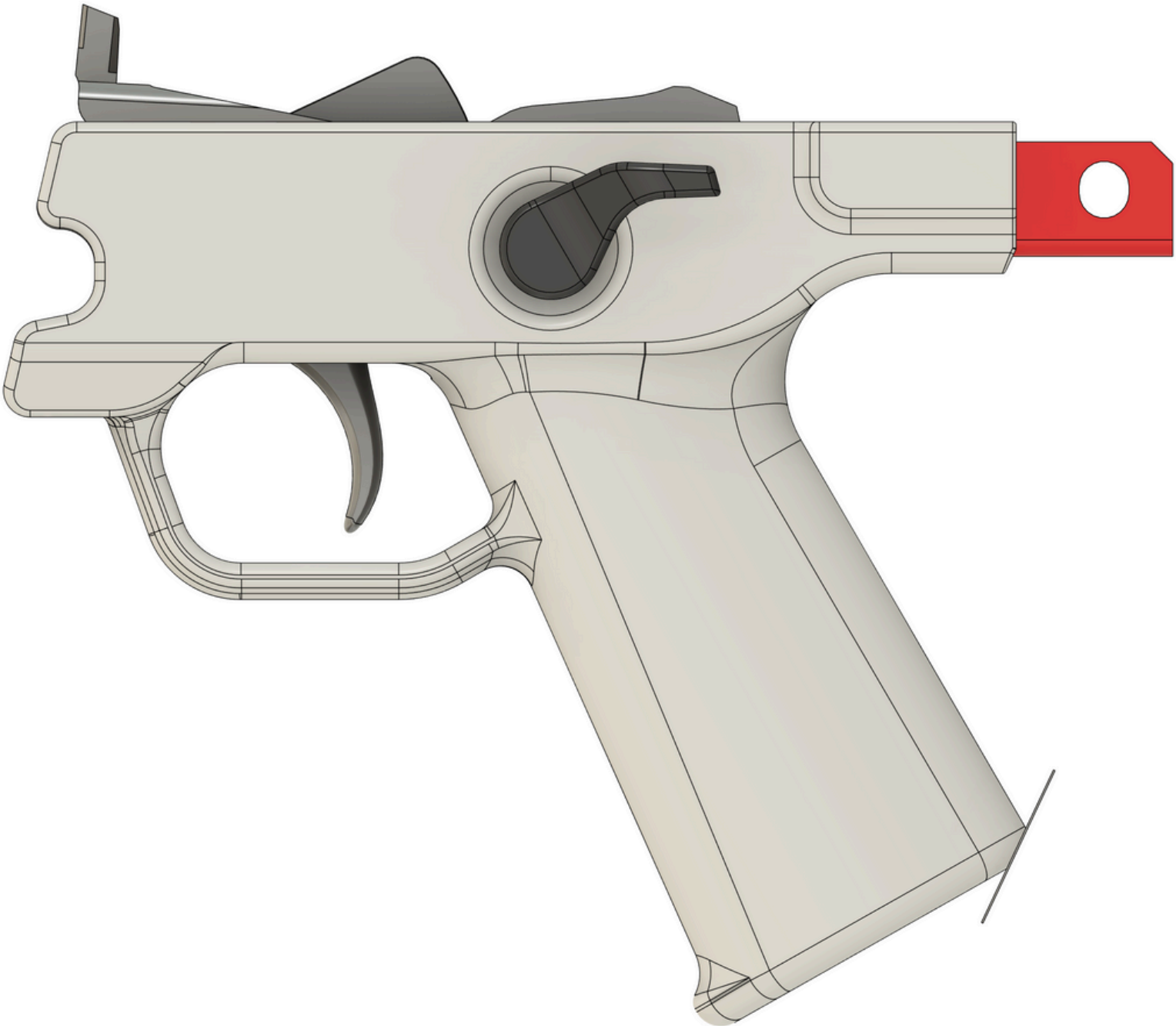




- Thread the M5x20 socket head screw into the ramp. Do not overtighten this screw; just get it hand tight.

TPU Buffer install Full Size MP5 Only

- Slide your 48mm TPU buffer onto the recoil spring and install the lower as you would any other MP5 lower.



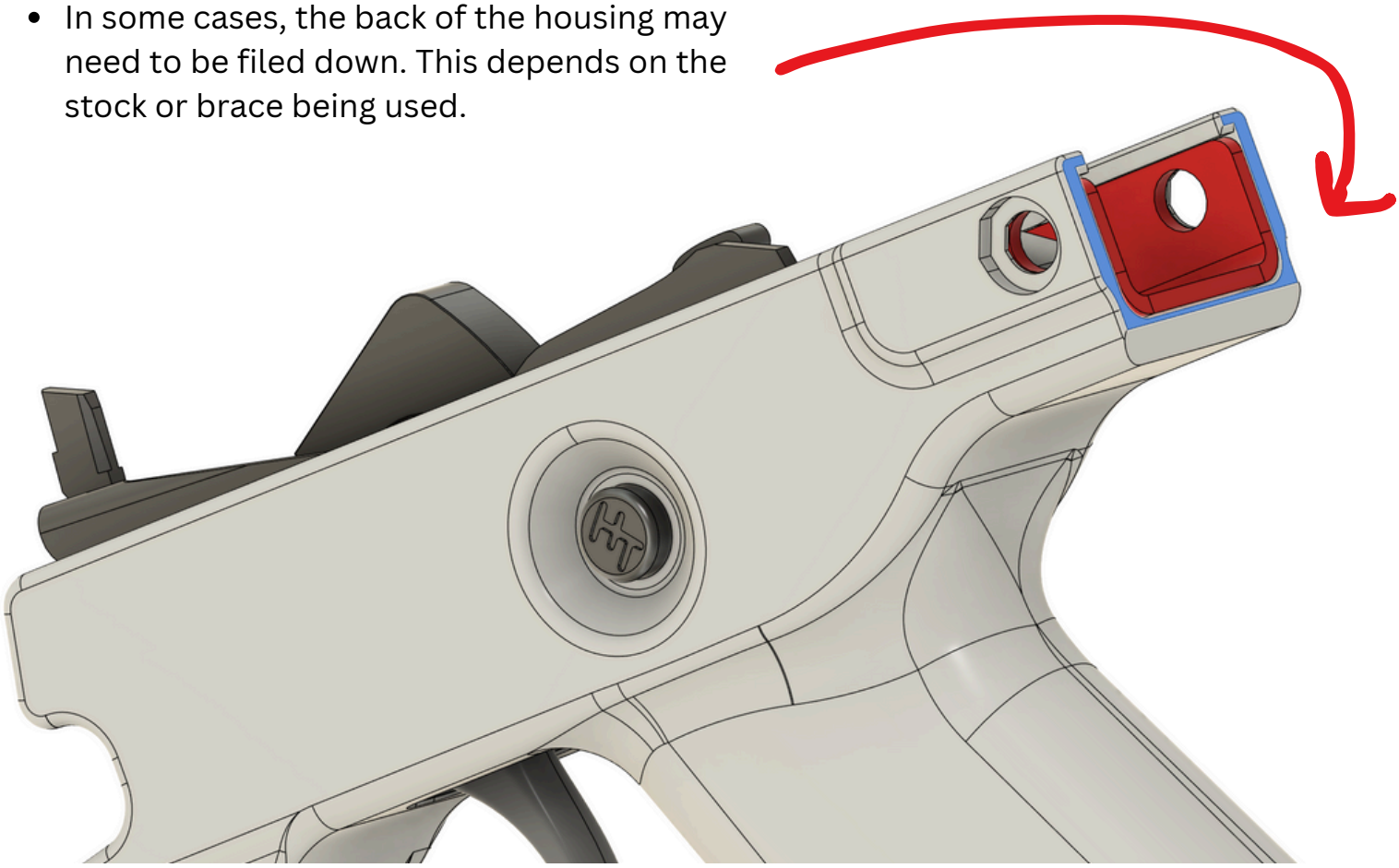
Function checking the lower

At this point, verify that the ejector moves freely up and down without any resistance. This step is crucial, as a sticking ejector will cause failures to eject. Additionally, you can now perform a function check of your FCG in both semi and Super Safe modes while it is off the receiver. Be sure to catch the hammer to prevent it from slamming into the polymer housing.

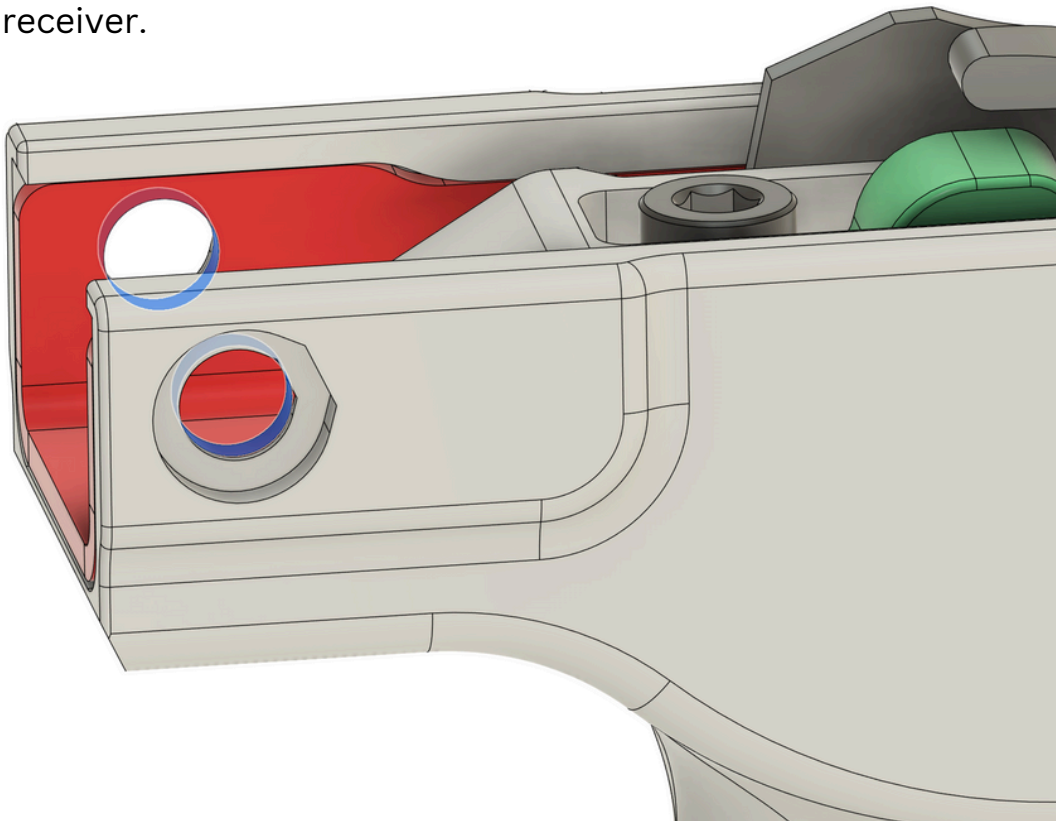
When testing a brand-new lower with live ammunition, it is highly recommended to start with a few mags of 124-grain NATO rounds, a 90-degree or 100-degree locking piece, in semi-auto mode only, and without a suppressor.
Make sure to follow the slip trip documentation if using the super safety.

Housing Fitment

- In some cases, the back of the housing may need to be filed down. This depends on the stock or brace being used.



- The plates are designed to be pushed forward or backward when the M5 screw is loose, ensuring the holes line up with the receiver.



Troubleshooting

- **Failure to eject:** See the ejection guide at the top of this document.

- **Light primer strikes:** Verify that your hammer spring is correctly installed and not backward. If that's correct, you can switch out your hammer spring for a new one or upgrade to the heavy hammer spring.

- **Bolt carrier stuck in the back of the upper:** Verify that your 48mm TPU buffer is installed over the recoil spring. Also, avoid using non-standard AR15 hammers, as this will require a different buffer size or modification to the hammer itself.

- **Send cut send plates are hard to install:** This is usually a good sign that you are printing well out of spec. Instead of sanding or banging on the plates, you should investigate why this might be happening with your printer and adjust settings.

- **Feeding Issues:** If you encounter feeding issues, I recommend using high-quality magazines such as genuine HK magazines or KCI Gen 2s. If failures persist, try replacing your mag catch with a genuine HK mag catch.

- **Back plate wont seat all the way in:** Ensure there is no support structure in the track of the lower housing where the back plate slides in. Any support structure in the track will prevent the plate from being fully inserted.

- **Hard to remove support structures:** If the support structures are difficult to remove, firmly tap on them or use pliers to dislodge them. They may feel stuck, but they should pop off with some force. A 0.15mm layer height is required for the support structures to remove correctly.

- **Loose / Wobbly ejector:** Make sure you are using a genuine German HK ejector as other manufactures will not work correctly with this lower.

- **Stuck selector detent:** If the hole has been properly drilled out to 1/8 inch and the detent is still stuck, you will need to push it out from the top using some filament. I just break a few inches off a roll of filament and use that. Ensure that no supports are being generated in the detent track, as these will also need to be cleared.

- **Lower retainer pins are tight:** This can happen when the back plate is not aligned correctly before being tightened down. The back plate is designed to be adjustable, so make sure it is lined up with your upper's holes before tightening the screw.