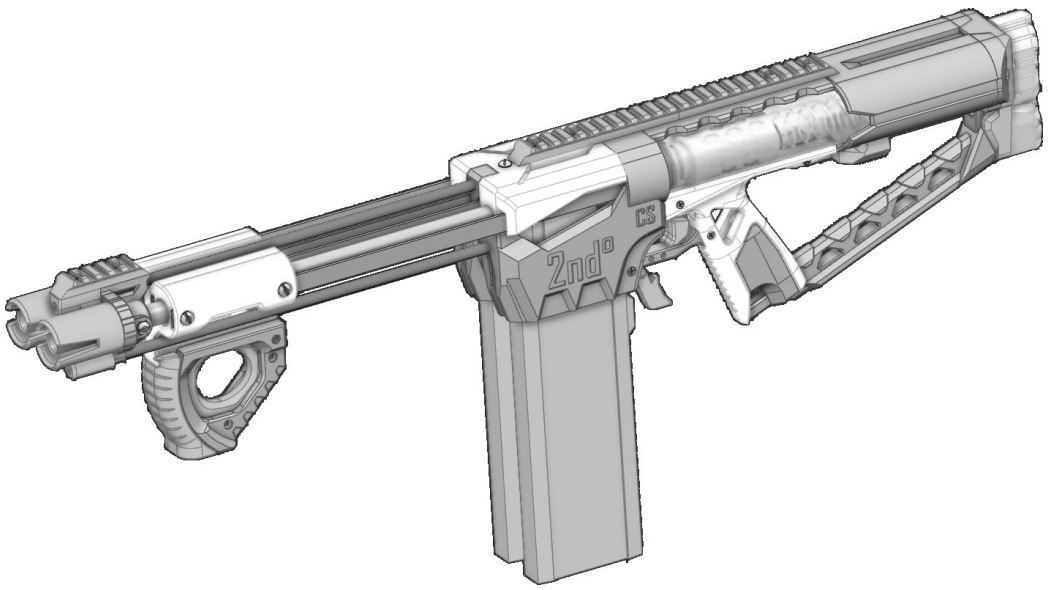
2nd-DegreeBurn ASSEMBLY INSTRUCTIONS



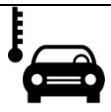
The 2nd-Degreeburn is a DOUBLE Mag-Fed Pump-Action Homemade Nerf Blaster design released as a Non-Commercial license file set by Captain Slug (http://www.captainslug.com).

You are welcome to and encouraged to modify the files in any way you want. The Majority of the parts can be printed with infill as low as 20% in PLA, but I would recommend printing in layers of 300 Micron or smaller.

Hardware kits and Blaster kits are available for sale as made-to-order items. I'm producing these myself in what remains of my free time.

https://www.etsy.com/shop/CaptainSlug

http://nerfhaven.com/forums/topic/27193-caliburn-mag-fed-pump-action-springer/



DO NOT STORE IN TEMPERATURES ABOVE 100F. Storing the blaster inside of a car in warmer months will cause the printed parts to distort or warp beyond their intended shape. If you have to store one in a vehicle, store it in the trunk.

DO NOT use this blaster for indoor wars or wars involving very short distances. The muzzle velocities this design can reach are between 150fps and 210fps depending upon the darts used and the spring installed. If indoor use is intended, obtain the lower fps springs that are currently available for this design (K31 and 788) and use them.

DO NOT Insert or Remove a Magazine while the breech is closed. Many aftermarket magazines are a tight fit over the RAM portion of the breech and doing this will likely cause the end of the RAM piece to break off.

HARDWARE LIST COMING SOON

To assemble this blaster you will need a Slotted Screwdriver, Small Philips Screwdriver, 3/8 Combination Wrench, and a Round Needle File. You may also need a 3/16” drill bit and a SLOW power drill.

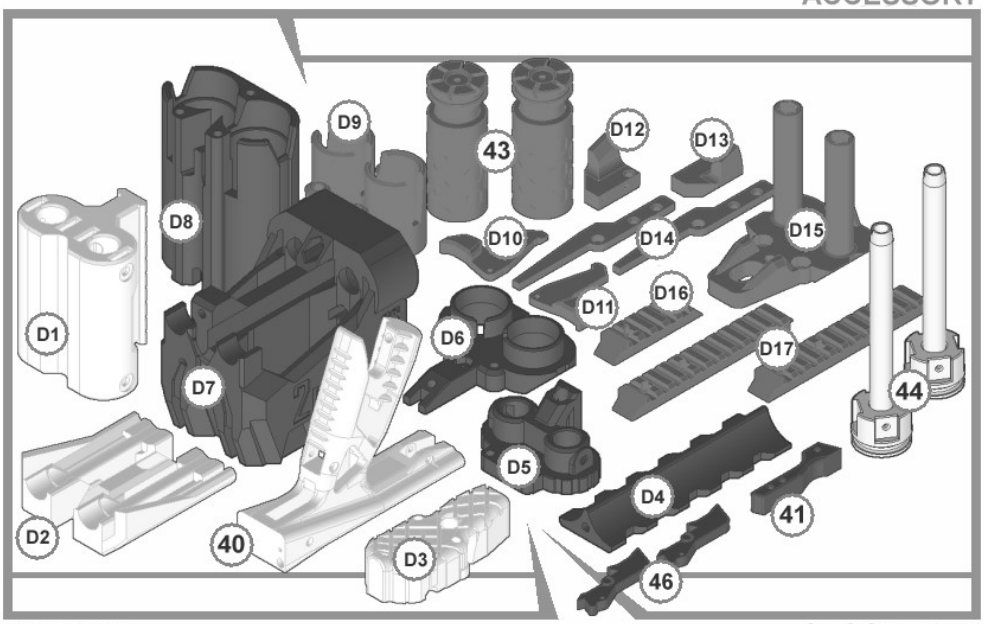
The Plunger Tubes in the Hardware Kit does come pre-lubricated. But it's also a good idea to have extra lubricant on-hand for the Plunger Tube and I would recommend only using a clear Silicone Grease such as Oatey's brand #30219. Any clear 90% silicone grease will work fine so long as it does not include any additives. NEVER USE SILICONE LUBRICANT FROM AN AEROSOL CAN. The propellants used in those are harmful to plastic parts.

ALSO AVOID DRY-FIRING THIS BLASTER EXCESSIVELY. Firing without a dart in the barrel will add unneeded wear on this blaster, especially if the higher load rating springs are installed. Also do not pull the trigger with the foregrip in the rearward position (with the breech open). The breech being slammed closed by the main spring is very likely to damage both the breech itself and the magwell.

2nd-DegreeBurn PRINTED PART SET

10/6/19

ACCESSORY



PRIMARY SECONDARY

Note: Print layers should not be any larger than 300 microns.
Parts were designed for PLA filament, but can be printed using ABS without issue. No support material is needed.
Most of the parts should print to tolerance on their hole diameters, but results may vary so expect to have to touch up some of them with a round needle file

- Captain Slug

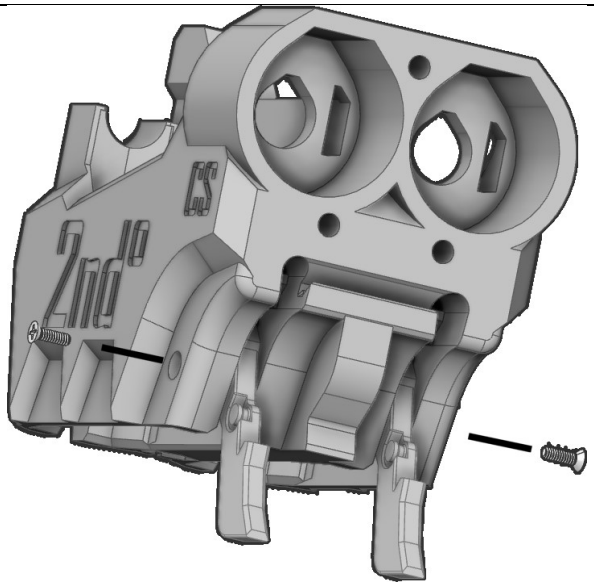
Assembly Instructions:
http://captainslug.com/nerf/2ndDegreeBurnAssembly1.pdf

Item #	Quantity	Part Name
D1	1	2ndForegrip
D2	1	2ndJam
D3	1	2ndButtplate
40	1	Grip5t
46	2	MagRelease3
41	1	Tguard7
D4	1	2ndRail
D5	1	2ndMuzzle
D6	1	2ndFrontButt
D7	1	2ndMagLower
D8	1	2ndStock
D9	1	2ndMuzzleB
43	2	PlungerE
D10	1	2ndTriggerRight
D11	1	2ndTriggerLeft
D12	1	2ndSearRight
D13	1	2ndSearLeft
D14	2	2ndSearMiddle
D15	1	2ndBackButt
D16	1	rail_short
D17	2	rail_max
44	2	Ram2of

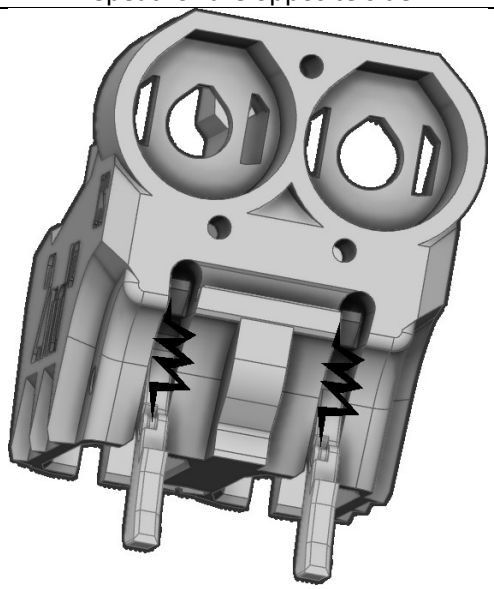
OPTIONS

		Ayy LMAO	
	AFG	Pyrangle	AyyFG
		Ayy LMAO	
		Grip Insert	
		Stock Upgrade	
		Iron Sights	

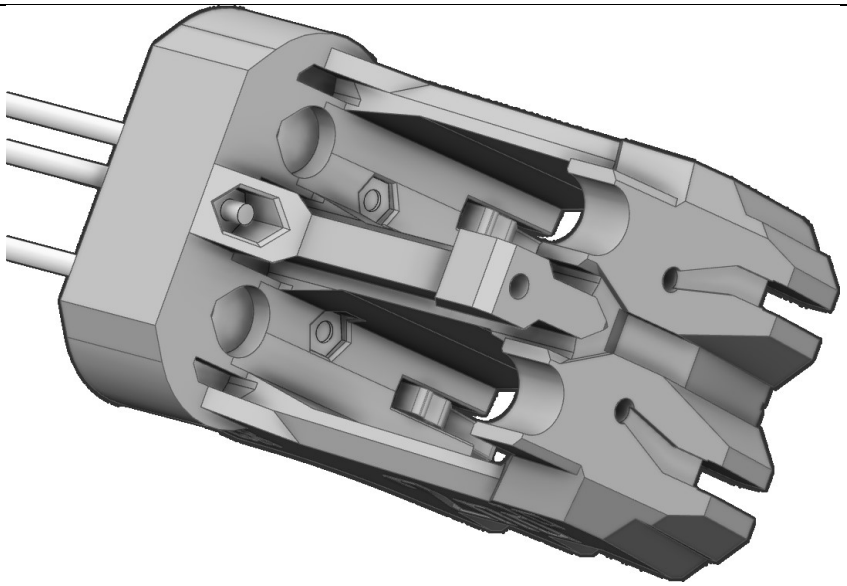
Above is a list of every printed part needed to assemble this blaster. The majority of the through holes should print to the required tolerance, but you will likely have one or two that may require minimal filing. Also make sure to trim off any burrs or oversized edges.



Slide a mag release print into a slot in the back of the 2ndMagLower print. Line up the hole in one of the mag release prints with the hole in the 2ndMagLower. Insert a short pin onto both. Drive a 4-40 screw into the hole to retain the pin. Repeat for the opposite side.



Hook the end of an extension spring onto the hook in the recessed area in the 2ndMagLower print, then onto the peg on the mag release print. Repeat for the opposite side.



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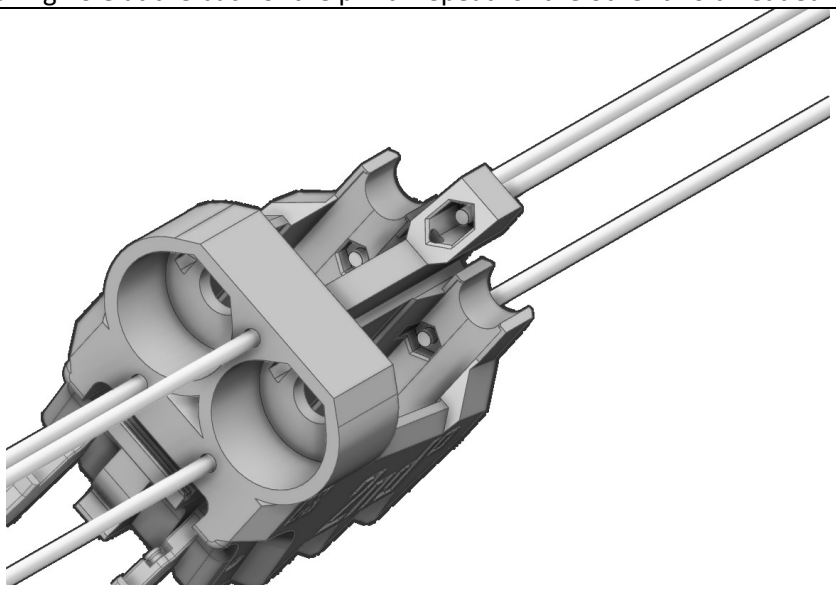
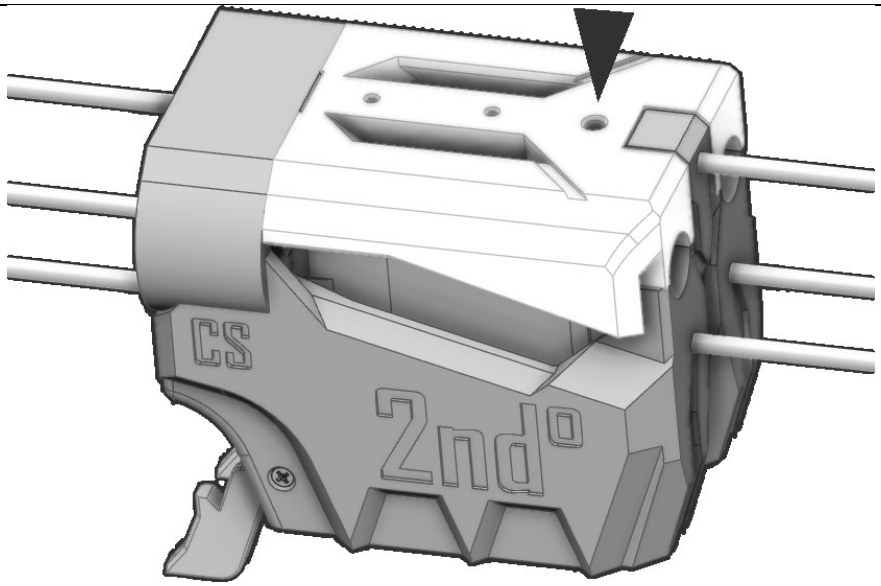
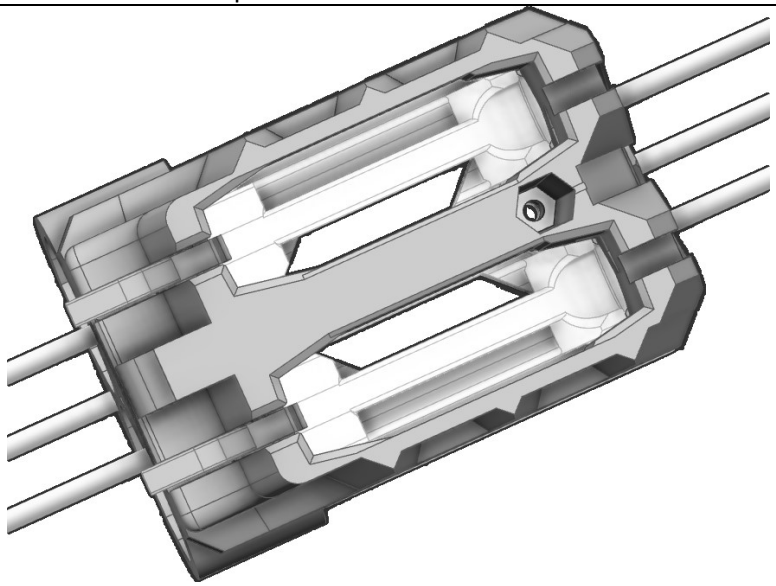
Insert a hex nut into one of the sockets inside the 2ndMagLower print. Then drive a threaded rod into it from the matching hole at the back of the print. Repeat for the other two threaded rods.



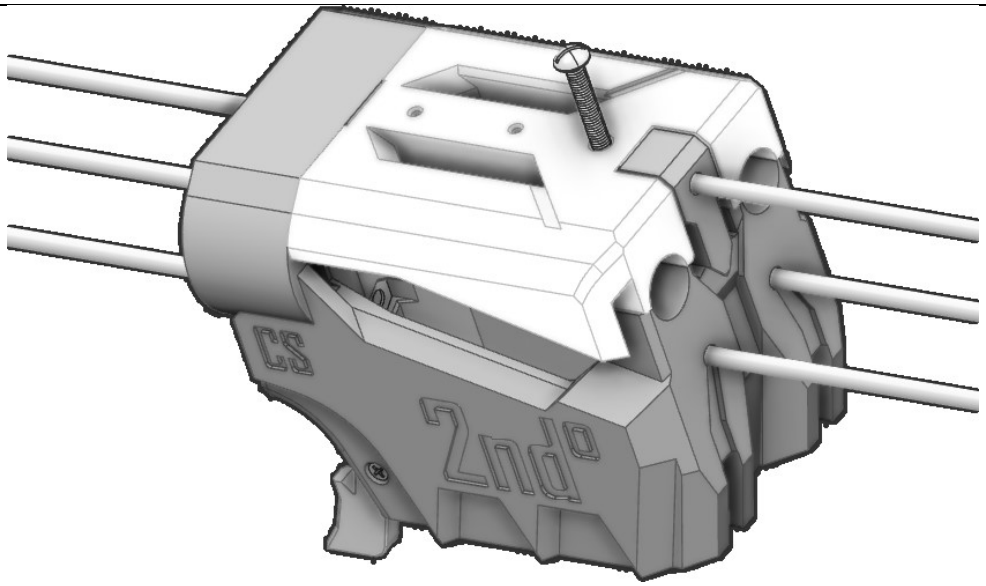
Repeat the process for all three forward threaded rods. As the build progresses, make sure that these don't protrude inside the 2ndMagLower print.



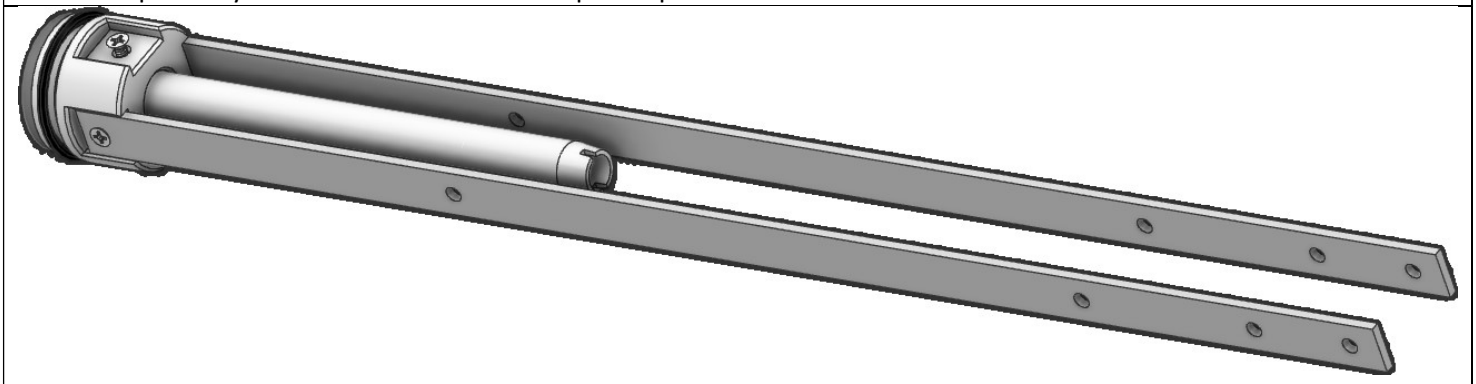
Add the 2ndJam print snugly to the top of 2ndMagLower. Use a power drill and a 3/16” drill bit to drill through both parts at this hole location.



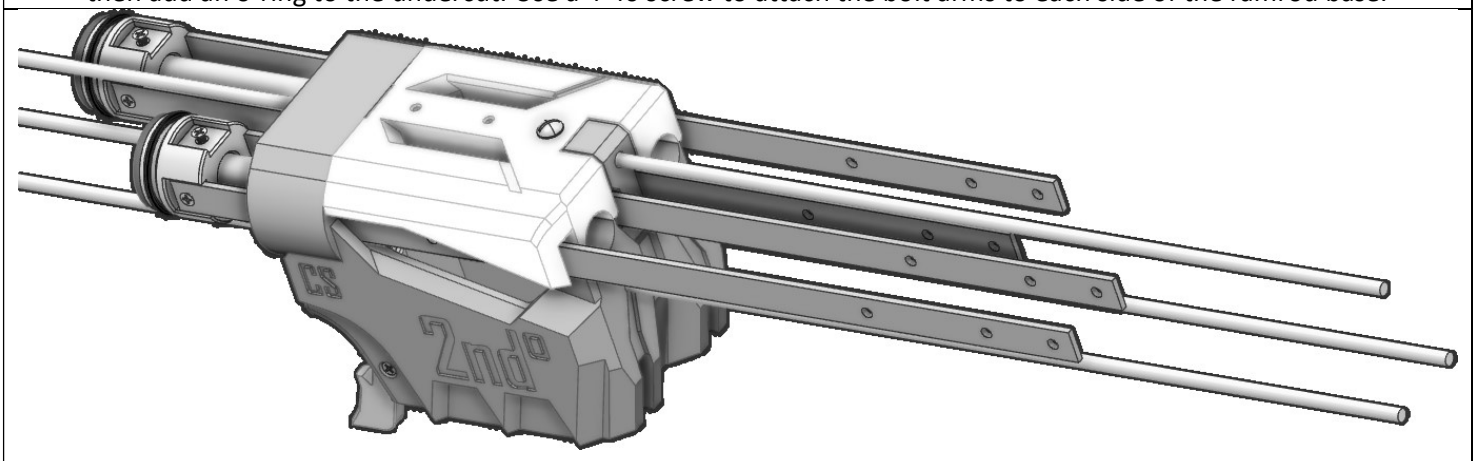
Use a slotted screwdriver to push a hex nut into the bottom of the socket from the bottom of the 2ndMagLower print.



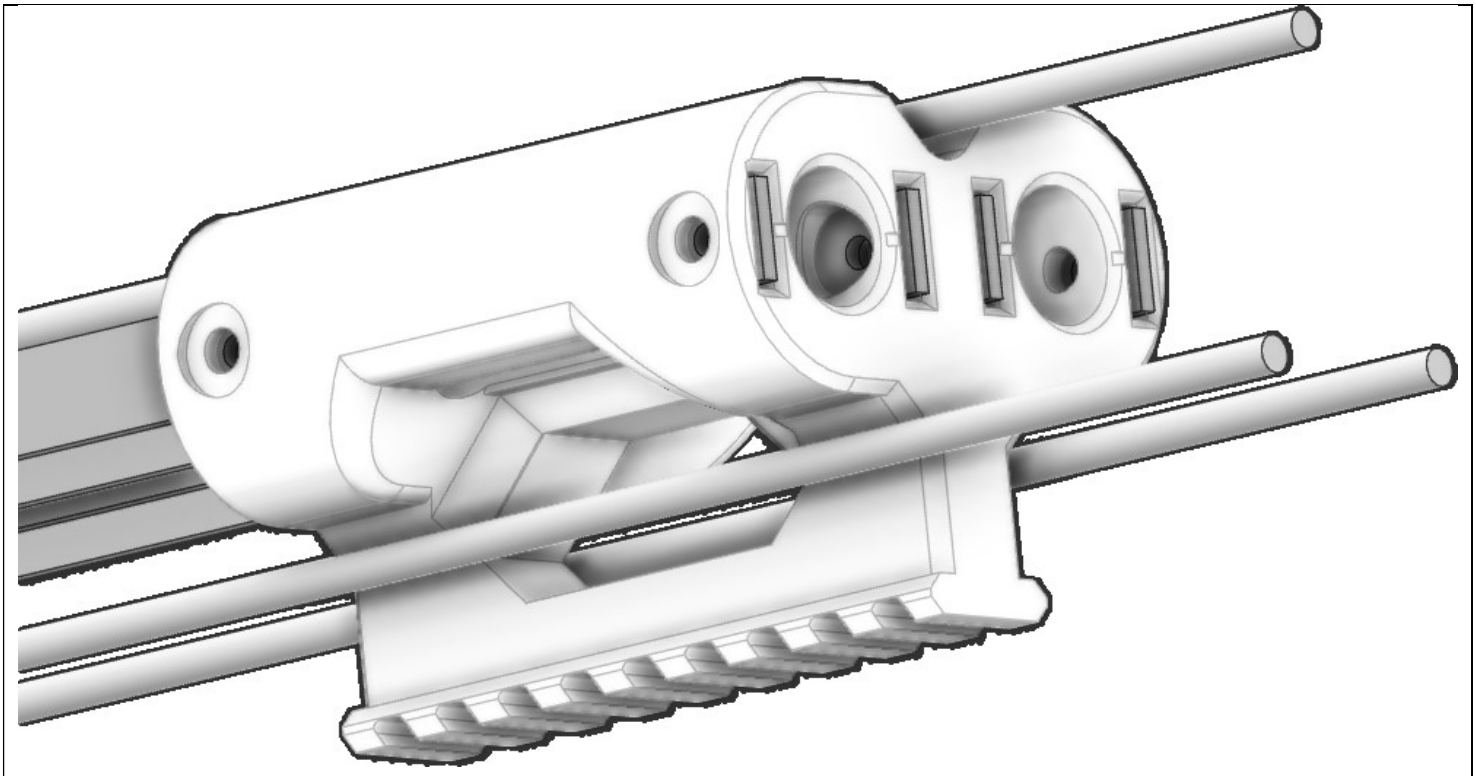
Use a slotted screwdriver to drive a 1-3/4” length screw into that hex nut through the hole in the top of 2ndJam. This will probably need to be done with both parts upside-down so that the hex nut doesn't fall out of the socket.



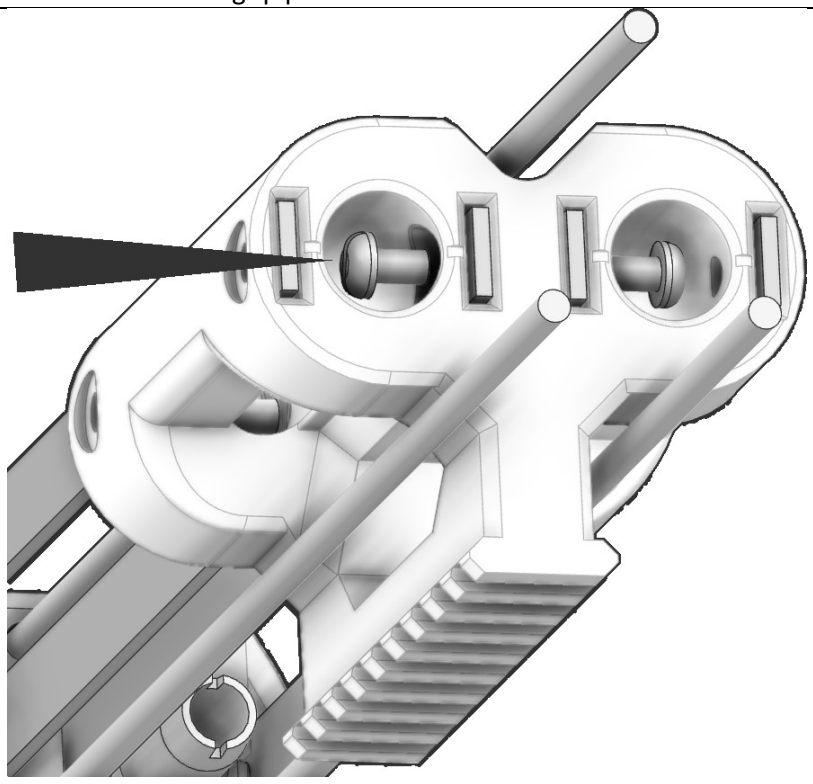
Insert a ramrod core into the ramrod base until to bottoms out against the lip in that print. Drive a 4-40 screw into the rambase print and against the ramrod core from two sides. Adhere a shock back to the back of the ramrod base print, then add an o-ring to the undercut. Use a 4-40 screw to attach the bolt arms to each side of the ramrod base.



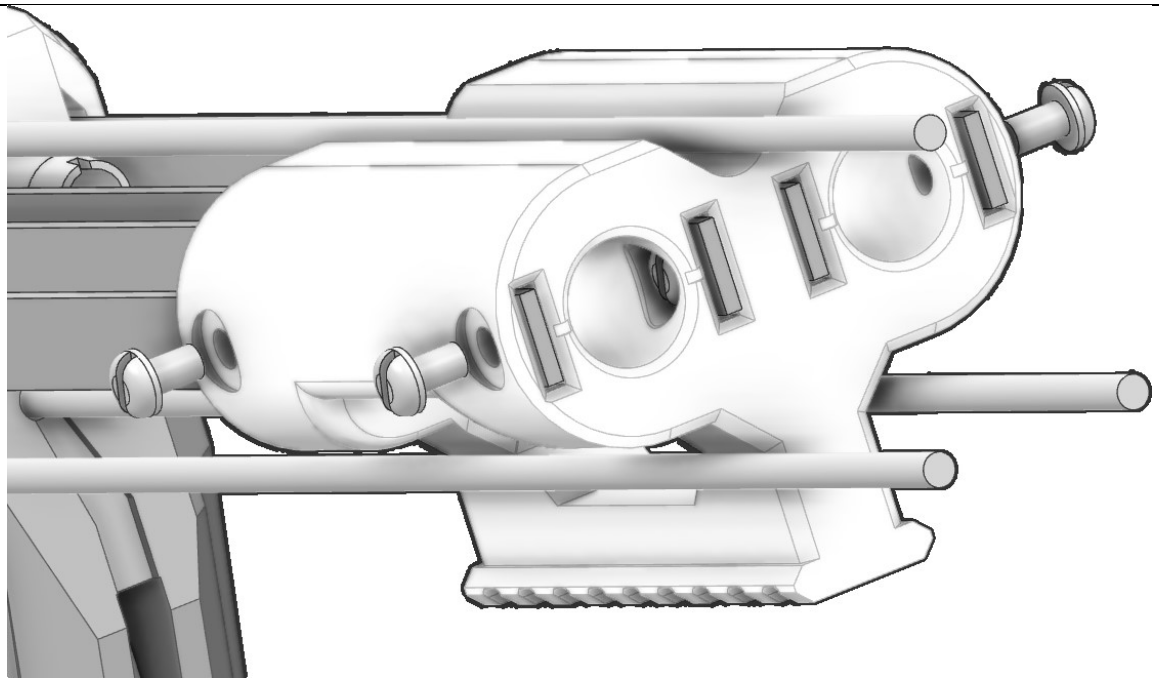
Repeat the above process for a second ramrod assembly. Then feed both into the 2ndMagLower assembly from the back.



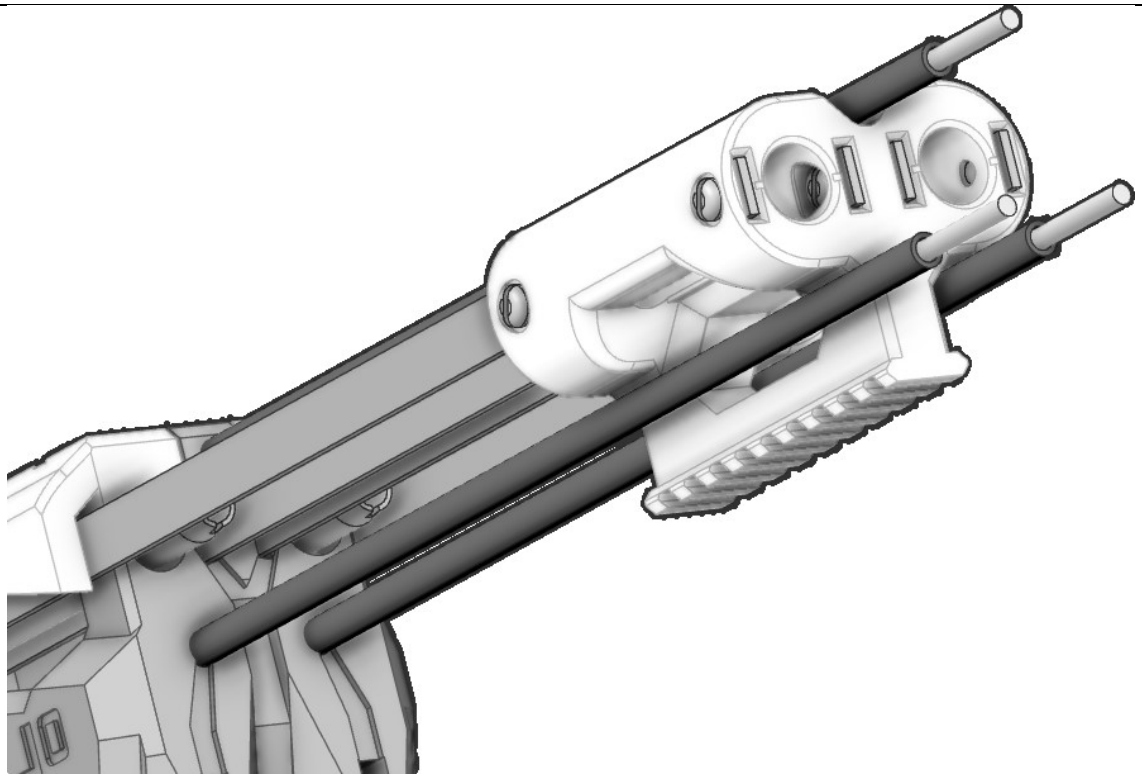
Slide the 2ndForegrip print onto the front of all of the Bolt Arms.



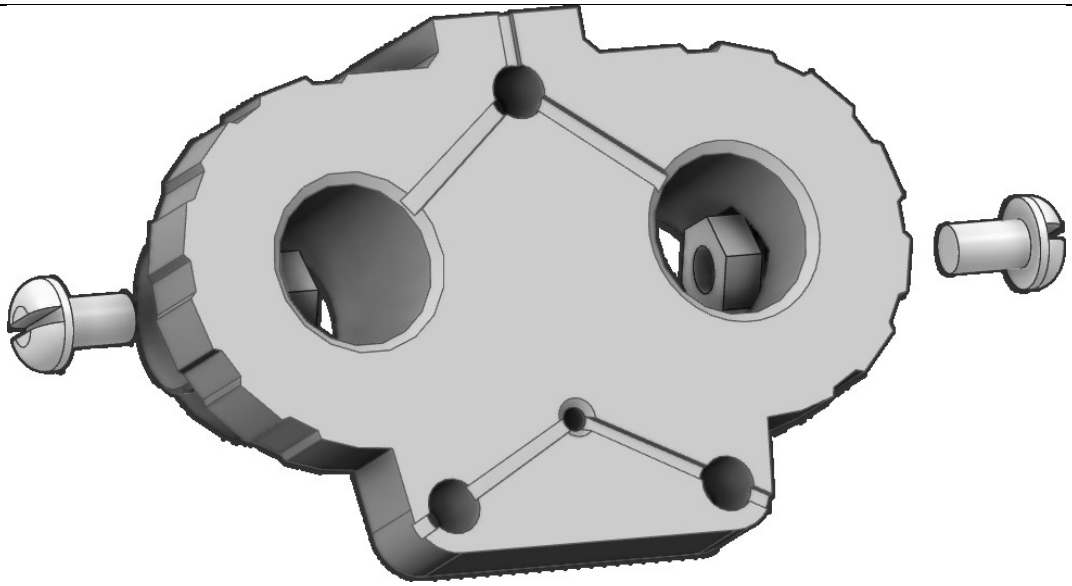
Feed a 10-32 screw into the front of the barrel hole of the 2ndForegrip print, then use a 3/16” diameter or smaller slotted screwdriver to drive it into the threaded hole in one of the central bolt arms. Repeat for the three remaining central bolt arm holes.



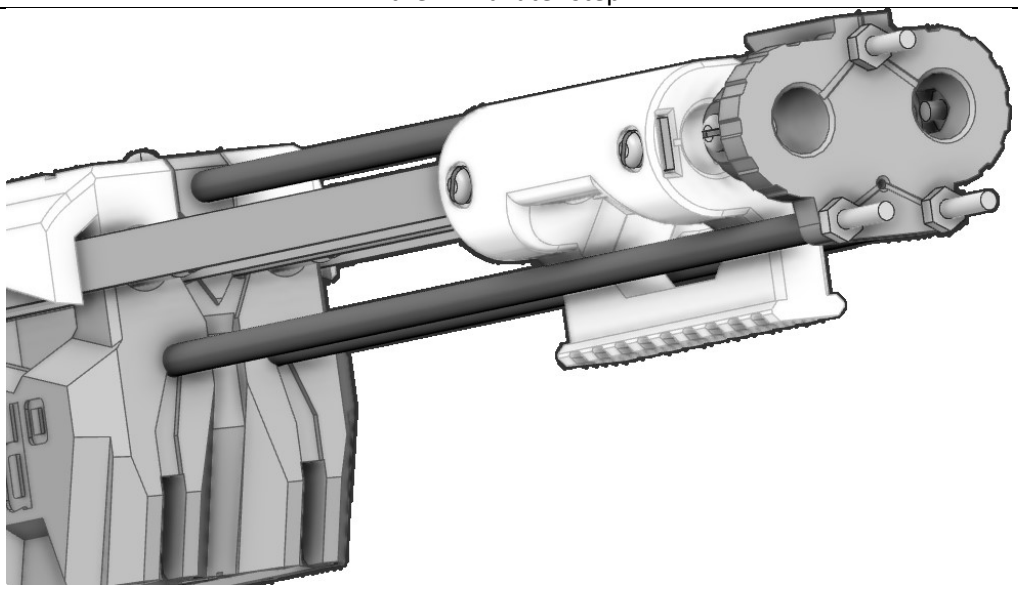
Use a short 10-32 screw to secure the outer threaded holes in the outer bolt arms.



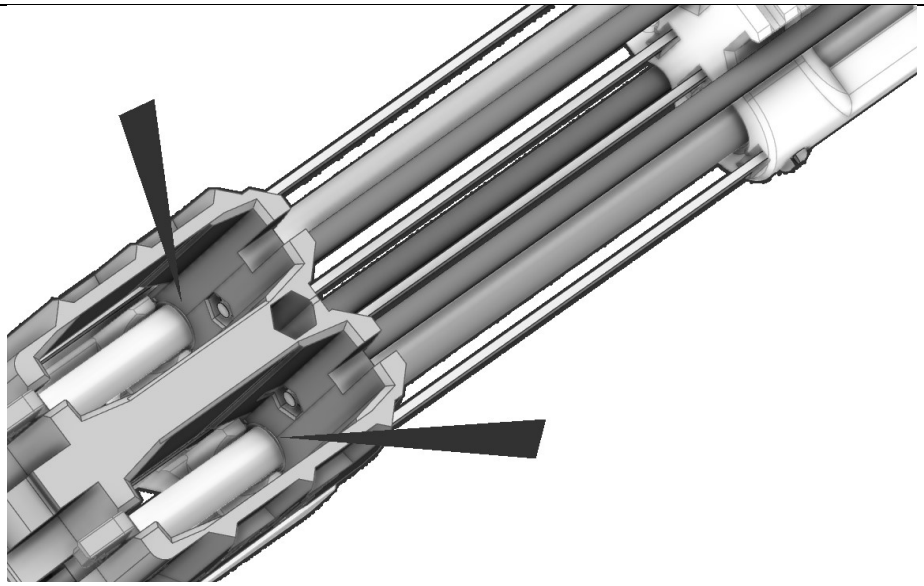
Slide a 11.25” length spacer tubing onto each of the three threaded rods.



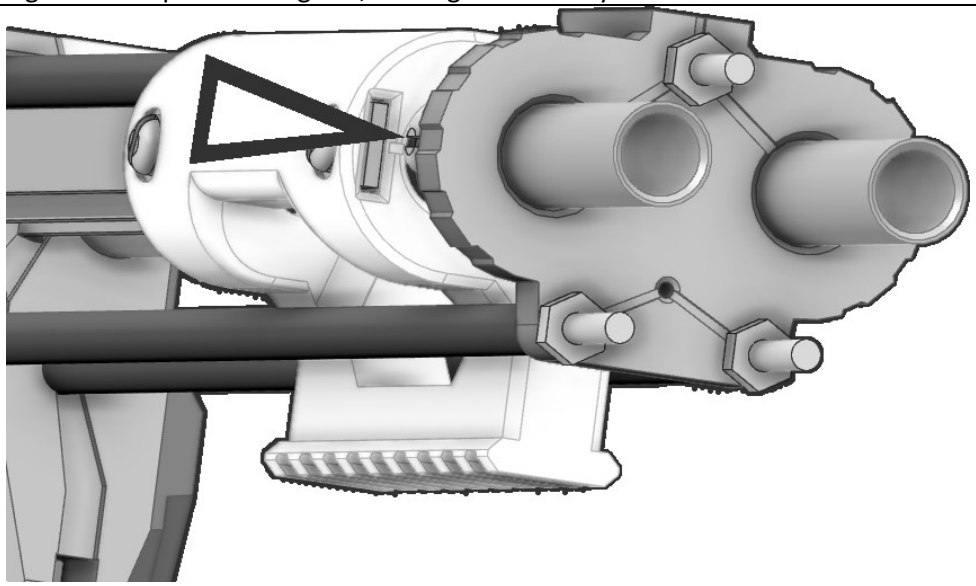
Insert a hex nut into the sockets inside the barrel holes of the 2ndMuzzle print, then drive a 10-32 screw into each one from the outer holes. Do not fully tighten these screws, as the barrel holes will need to have the barrels slide through them in a later step.



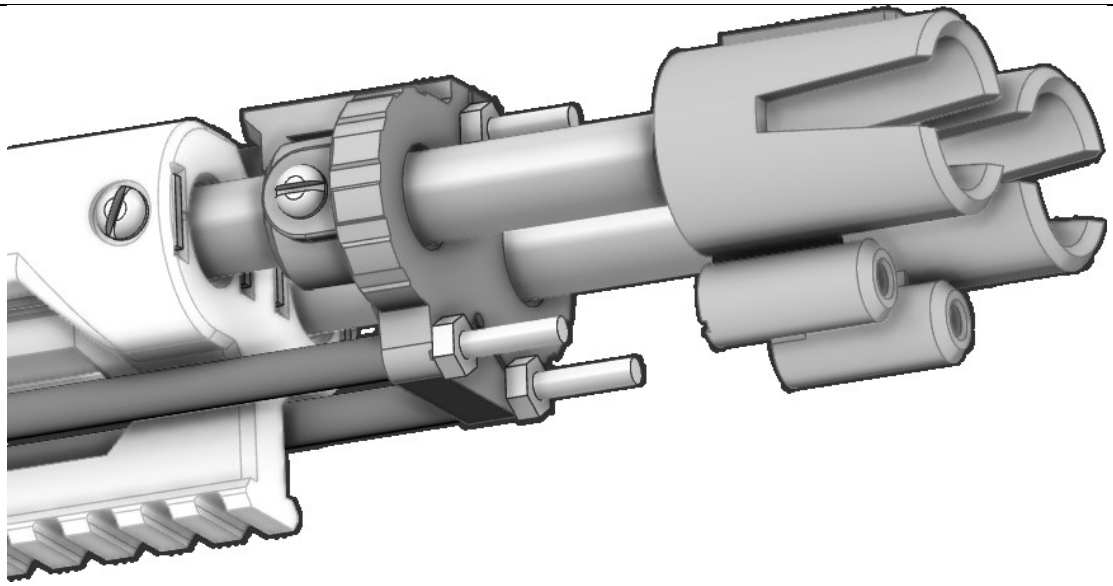
Slide the 2ndMuzzle print onto the ends of the threaded rods at the front of the assembly. Then secure it with three hex nuts.



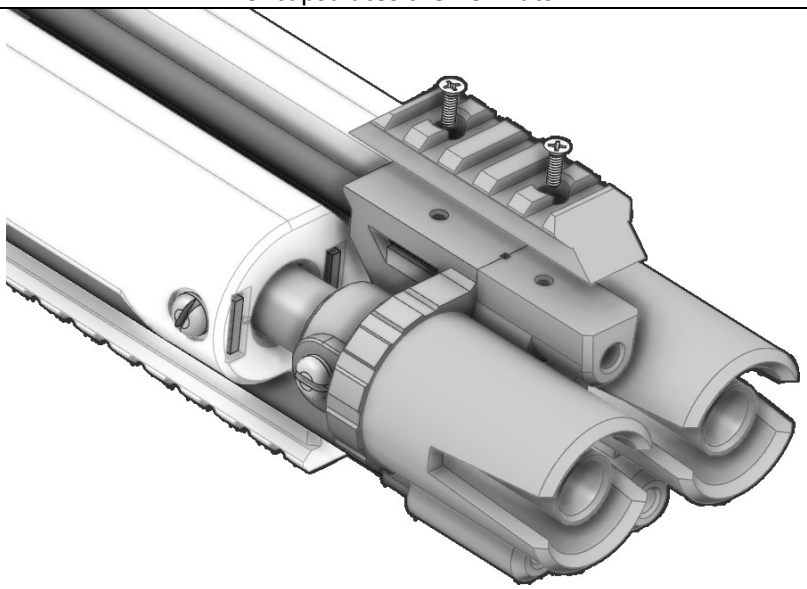
Slide a barrel into each barrel hole in the muzzle print, then into the holes at the front of the magwell. Push them in until the bottom out against the lip in the magwell, making them nearly flush with the inside of the magwell opening.



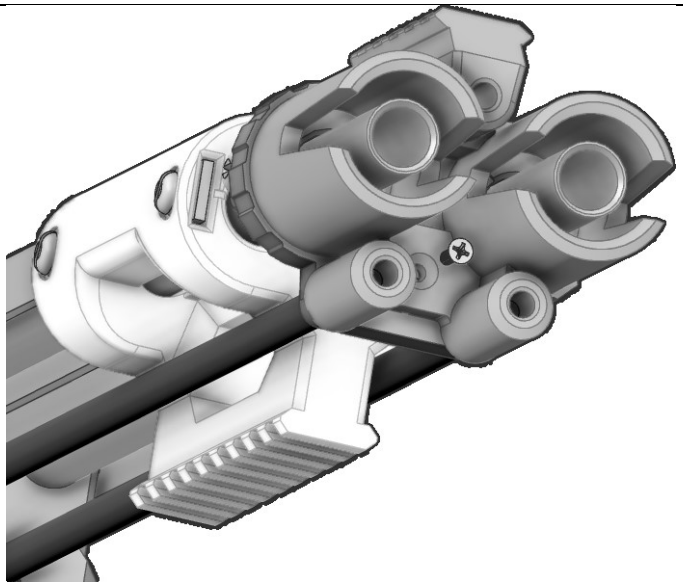
Tighten the 10-32 screws on the outside of the 2ndMuzzle print until the clamp the barrels in place.



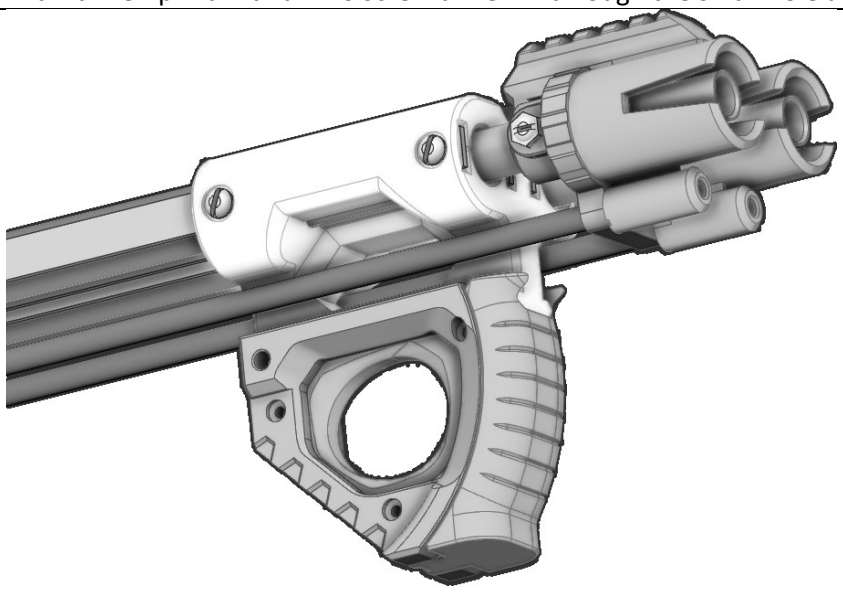
Line up the three hex nuts at the front of the threaded rods, then slide the 2ndMuzzleB onto the threaded rods until it encapsulates the hex nuts.



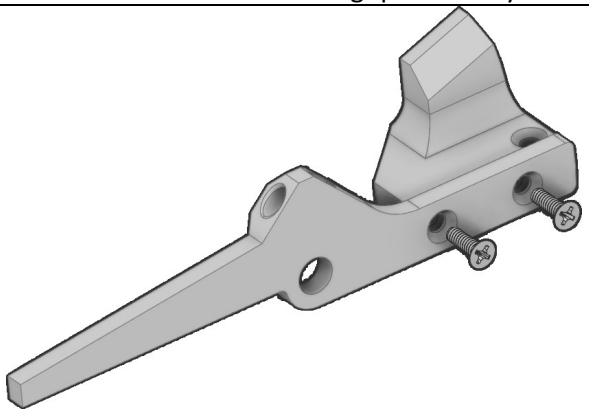
Add a rail_short print to the top of the muzzle and secure it by driving two 4-40 screw through the holes in it.



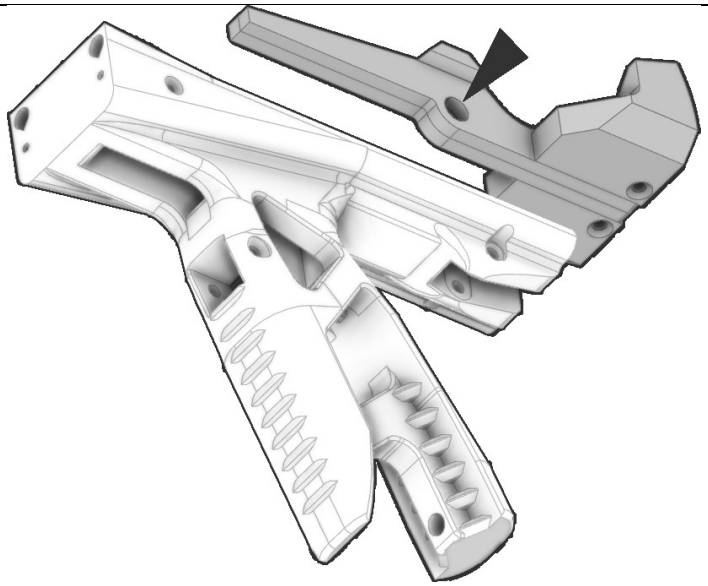
Secure the 2ndMuzzleB print with a 4-40 screw driven in through the small hole at the front.



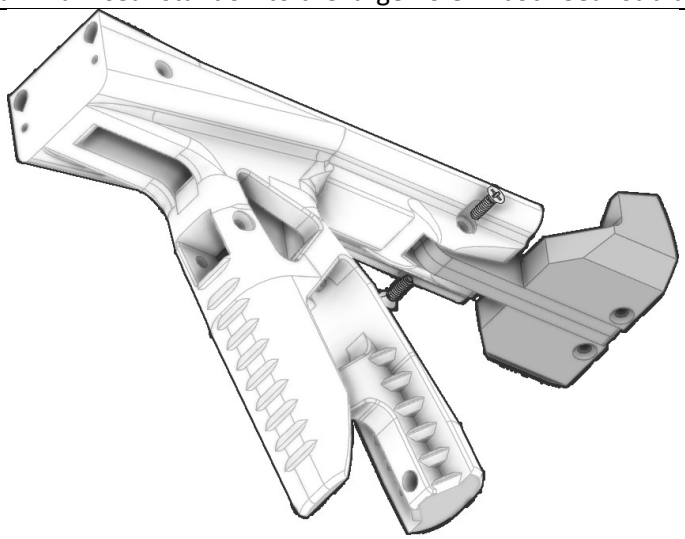
Attach a rail-mount foregrip accessory.



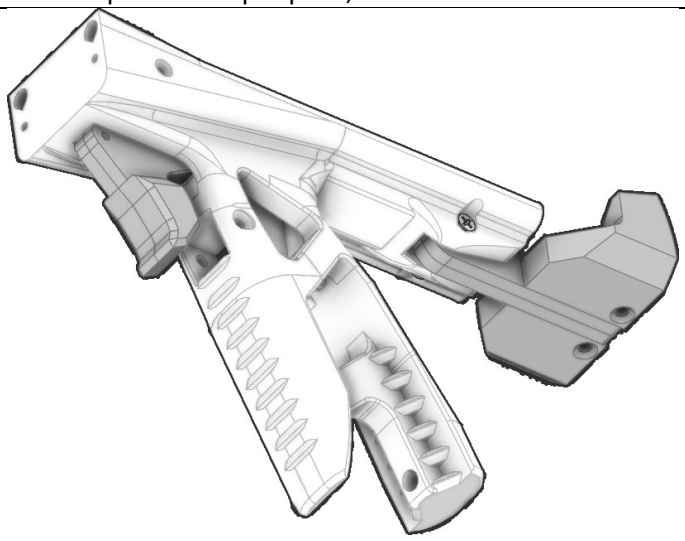
Take one of the two 2ndSearMiddle prints and attach it to the 2ndSearRight print with two 4-40 screws. Repeat to make a mirrored assembly using 2ndSearLeft.



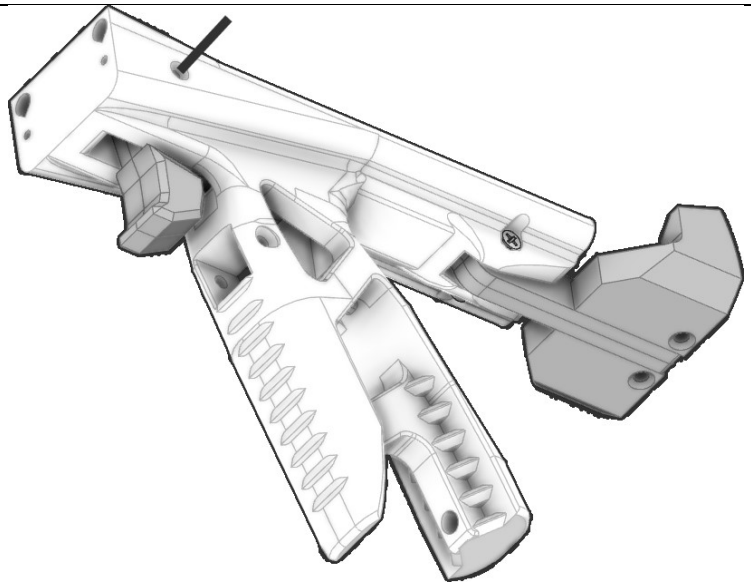
Add the aluminum sear standoff to the large hole in both Sear sub-assemblies.



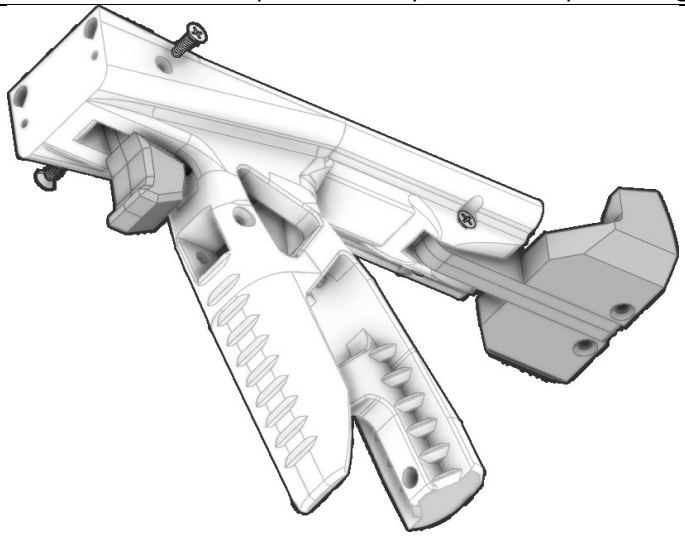
Slide it into the top of the Grip5t print, then secure it with two 4-40 screws.



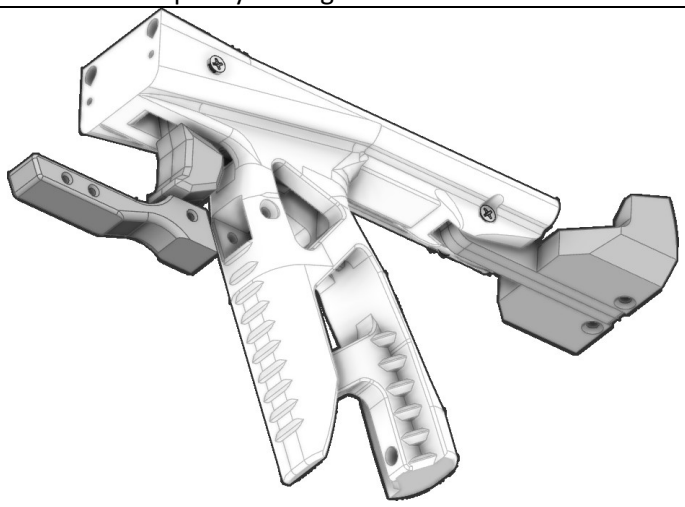
Angle both trigger half prints in through the slot in the front of the Grip5t print, then under the Sear sub-assemblies inside.



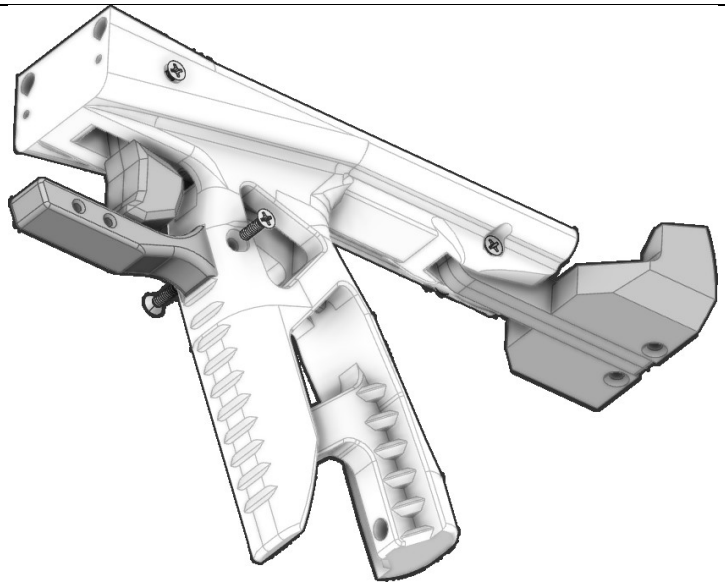
Line of the holes in all three components and push a short pin through all three.



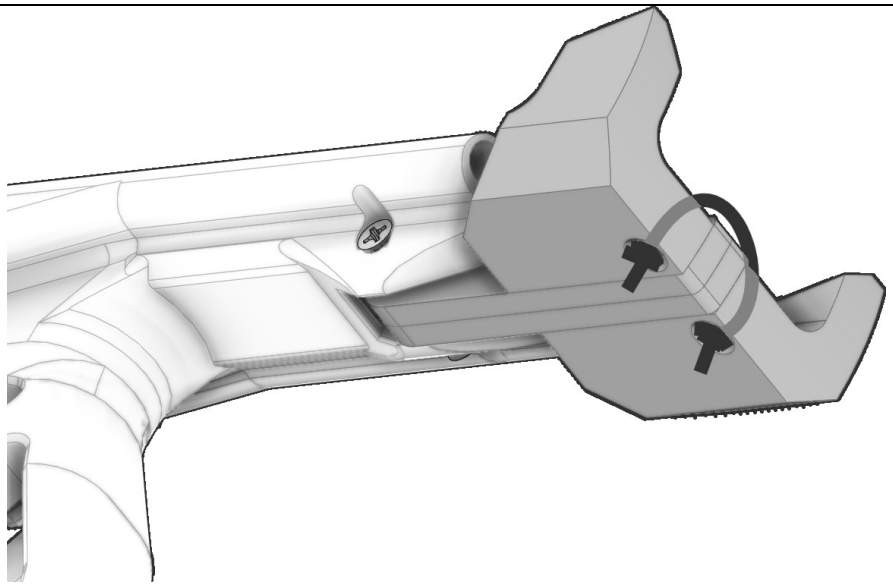
Retain the short pin by driving a 4-40 screw in from each side.



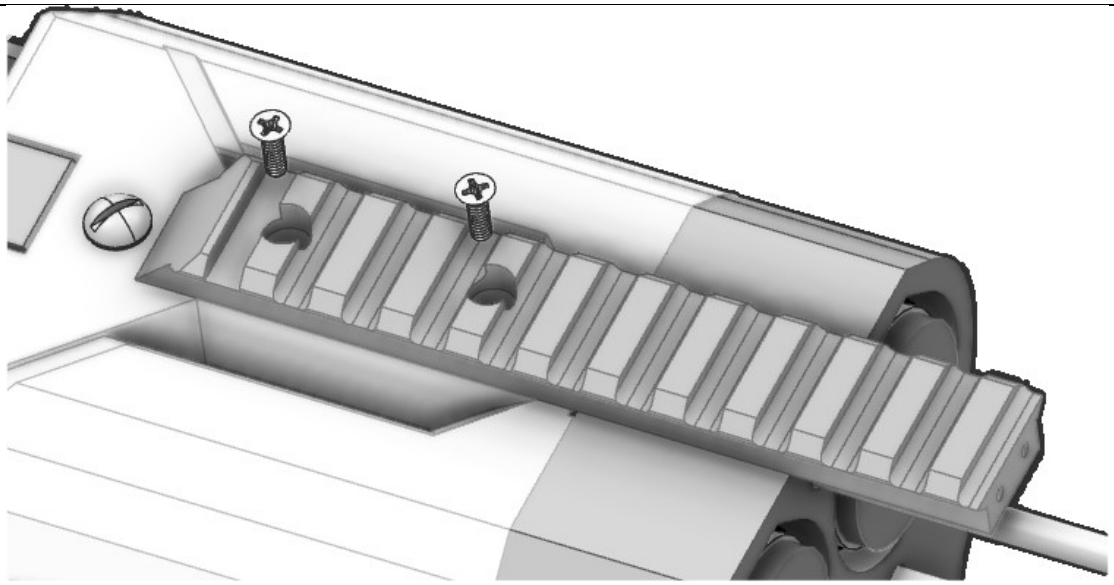
Tap the Tguard7 print into the square socket in the front of the Grip5t print.



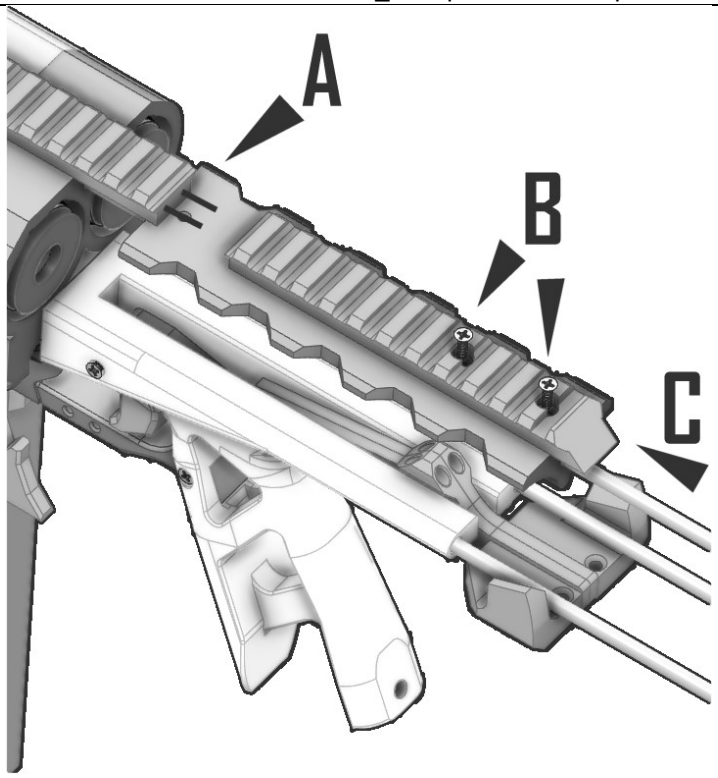
Tap it until the holes in it line up with the hole in the Grip5t print, then secure it by driving a 4-40 screw in from each side.



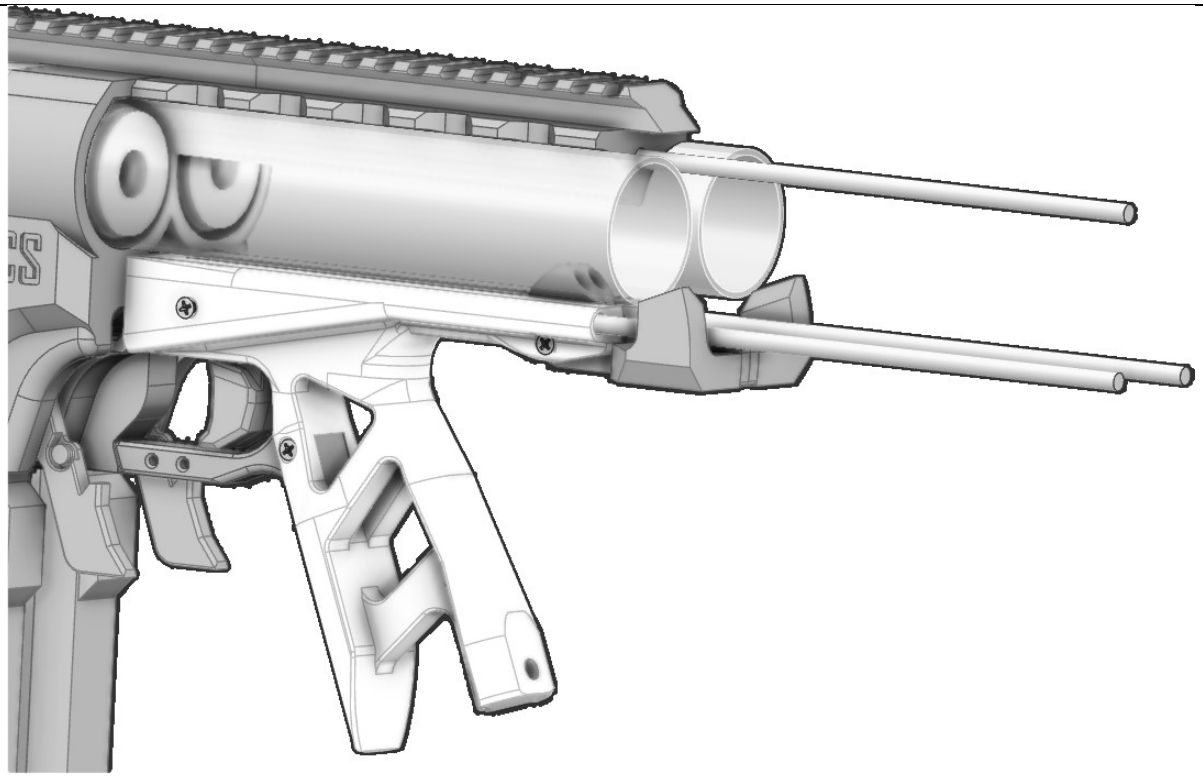
Tie a knot at the end of a short length of 3/32” diameter elastic cord. Feed it through one of the Sear halves from below, then loop over to the hole in the opposite half. Pull a little tight and tie another knot. Cut off the excess cord. The resulting loop of elastic should be as short as possible without being excessively tight.



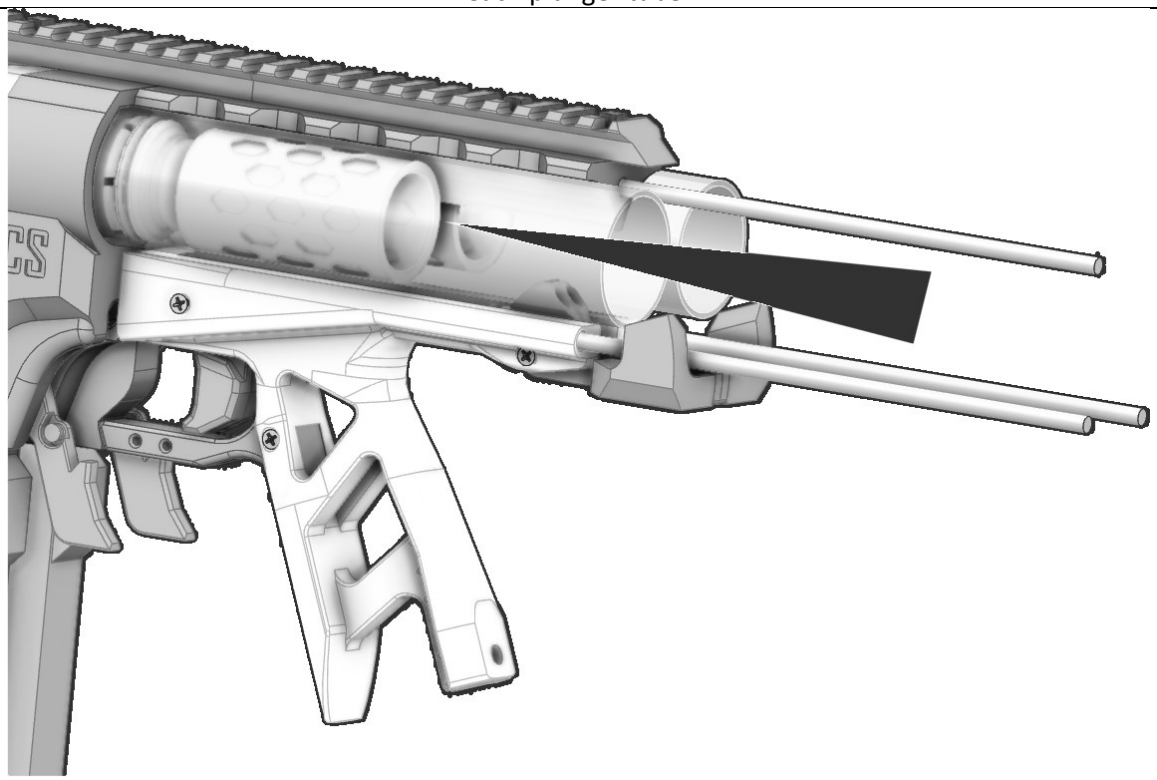
Use two 4-40 screws to attach a rail_max print to the top of 2ndJam.



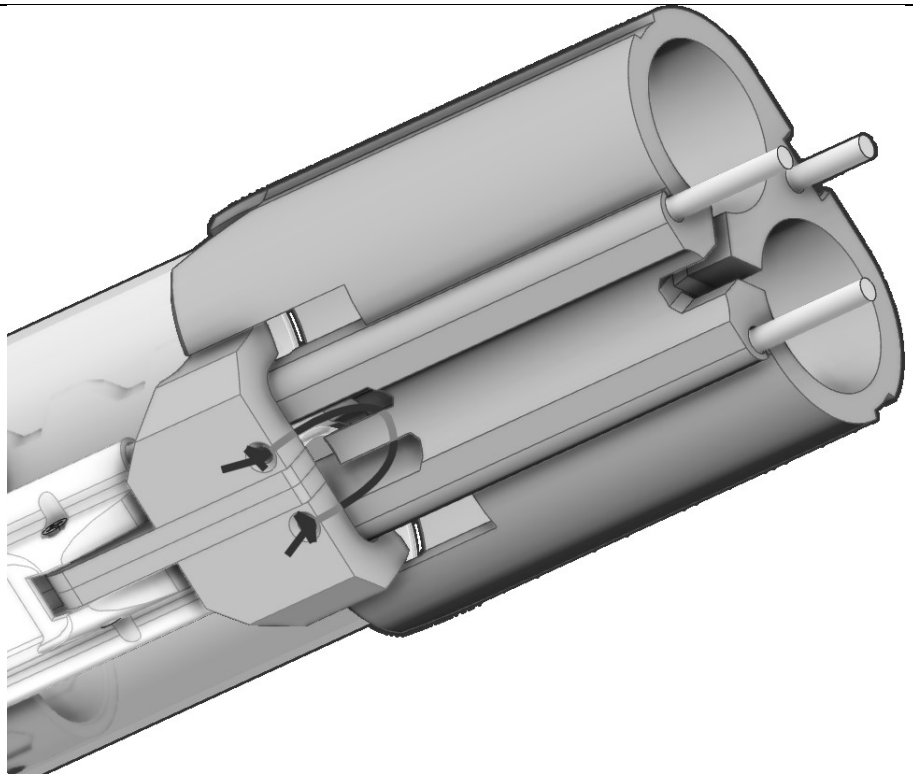
A. Add two short pins to the holes at the back of that rail_max segment
B. Attach another rail_max print to the top of the 2ndRail print as shown
C. Slide the 2ndRail onto the upper rear threaded rod, then onto the two short pins just added.



Slide the grip assembly onto the lower pair of threaded rods.
Then work a plunger tube onto each ramrod base. If not already lubricated, add some silicone grease to the inside of each plunger tube.

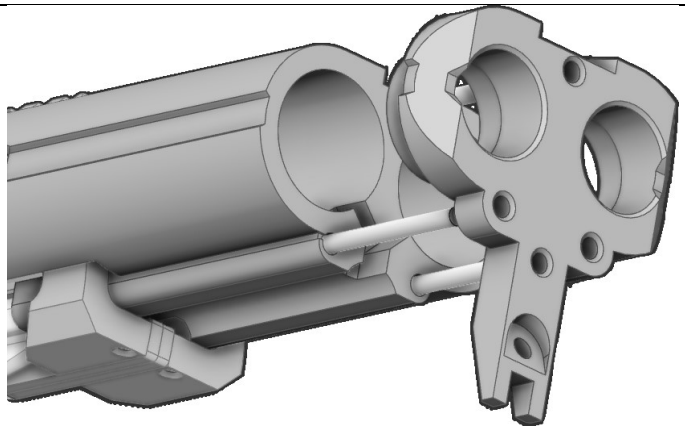


Add an o-ring to the undercut on each plunger print. Then insert one into each plunger tube.

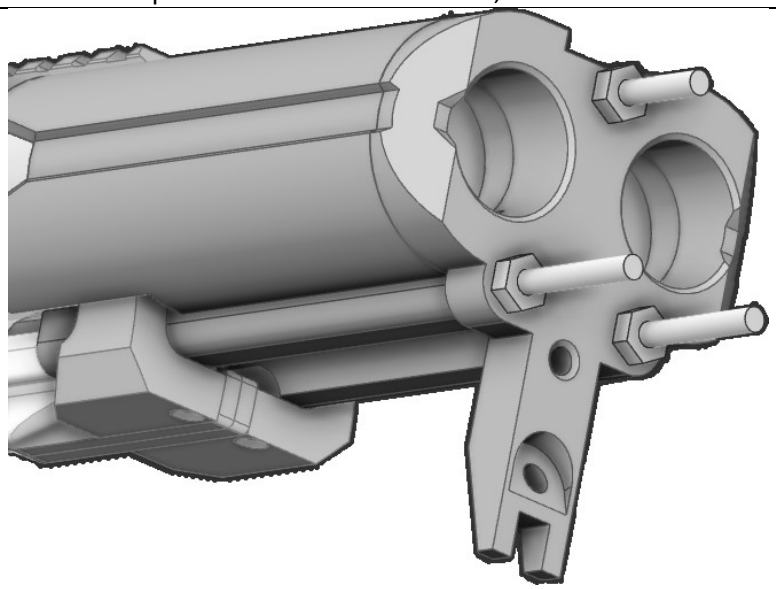


Slide the 2ndStock print onto the threaded rods, then use a slotted screwdriver or pick to pull the elastic loop onto the hook in the bottom front of the 2ndStock print.
Slide the 2ndStock print onto the two plunger tubes.

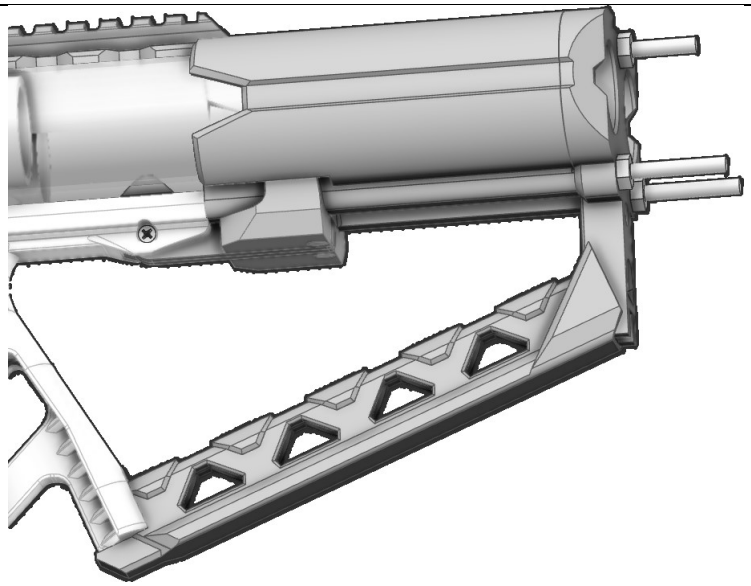
Add a hex nut into the socket at the front of the 2ndFrontButt print



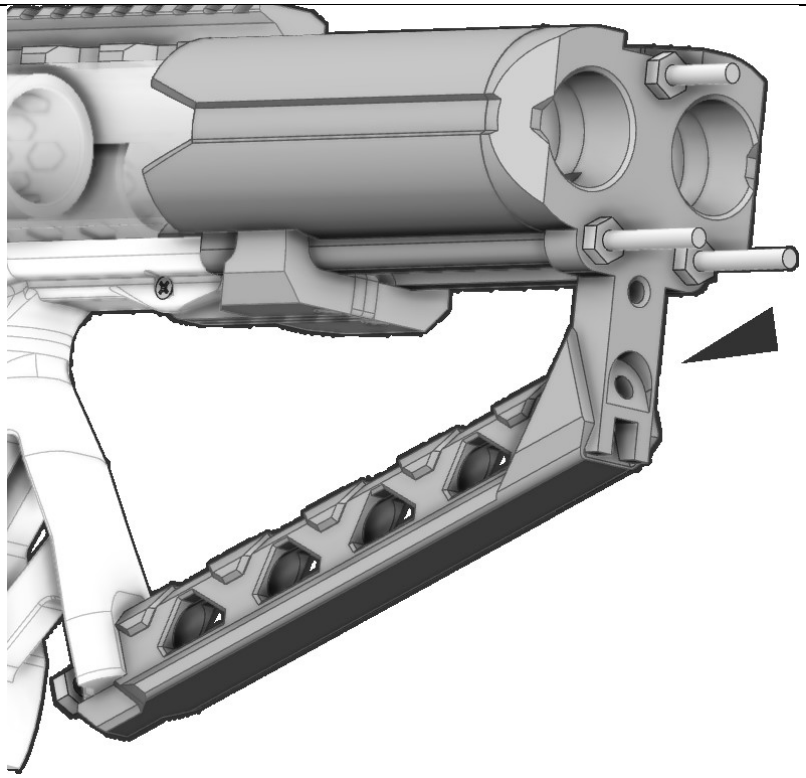
Slide the 2ndFrontButt print onto the threaded rods, and then into the 2ndStock print.



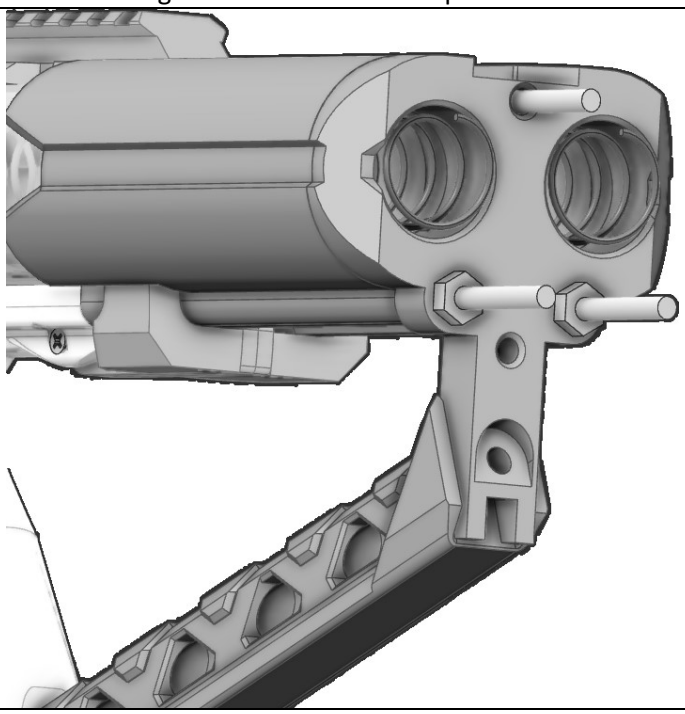
Secure it with a hex nu on each threaded rod.



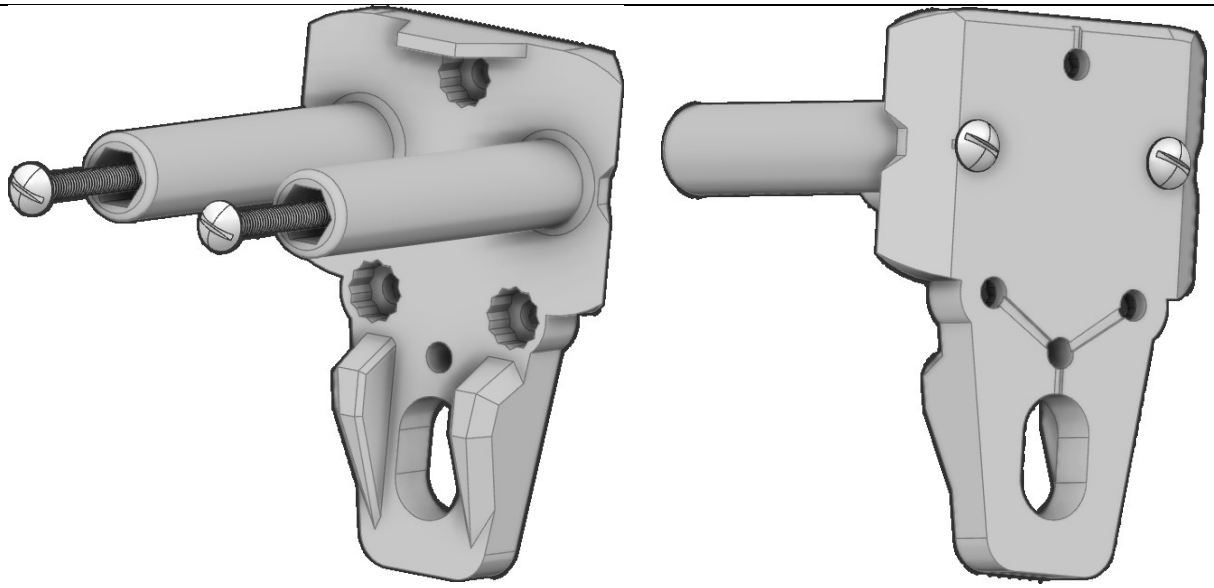
Add a printed lower stock spacer or 6” length of spacer tubing between the heel of the grip and the tang on 2ndFrontButt.



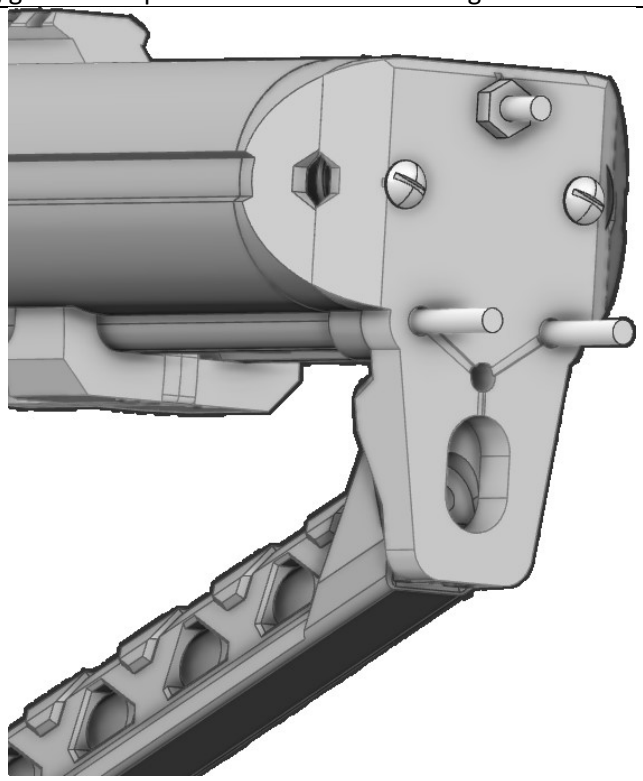
Slide an 8” length of threaded rod through the holes in all three parts. Then secure at both ends with a hex nut.



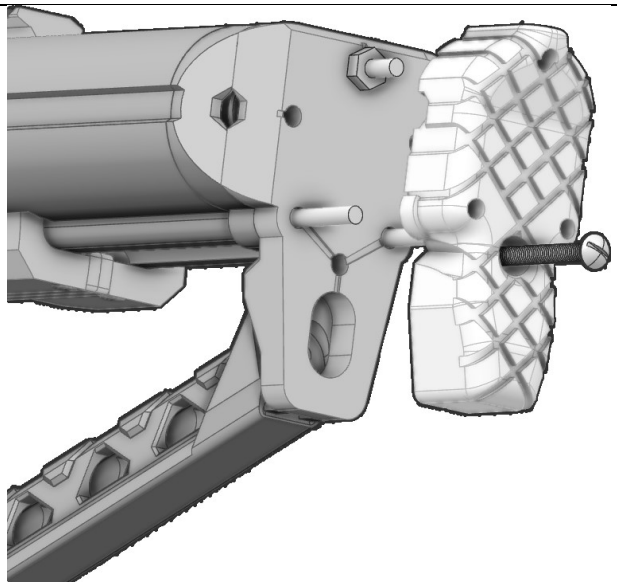
Add a main spring to each plunger tube.



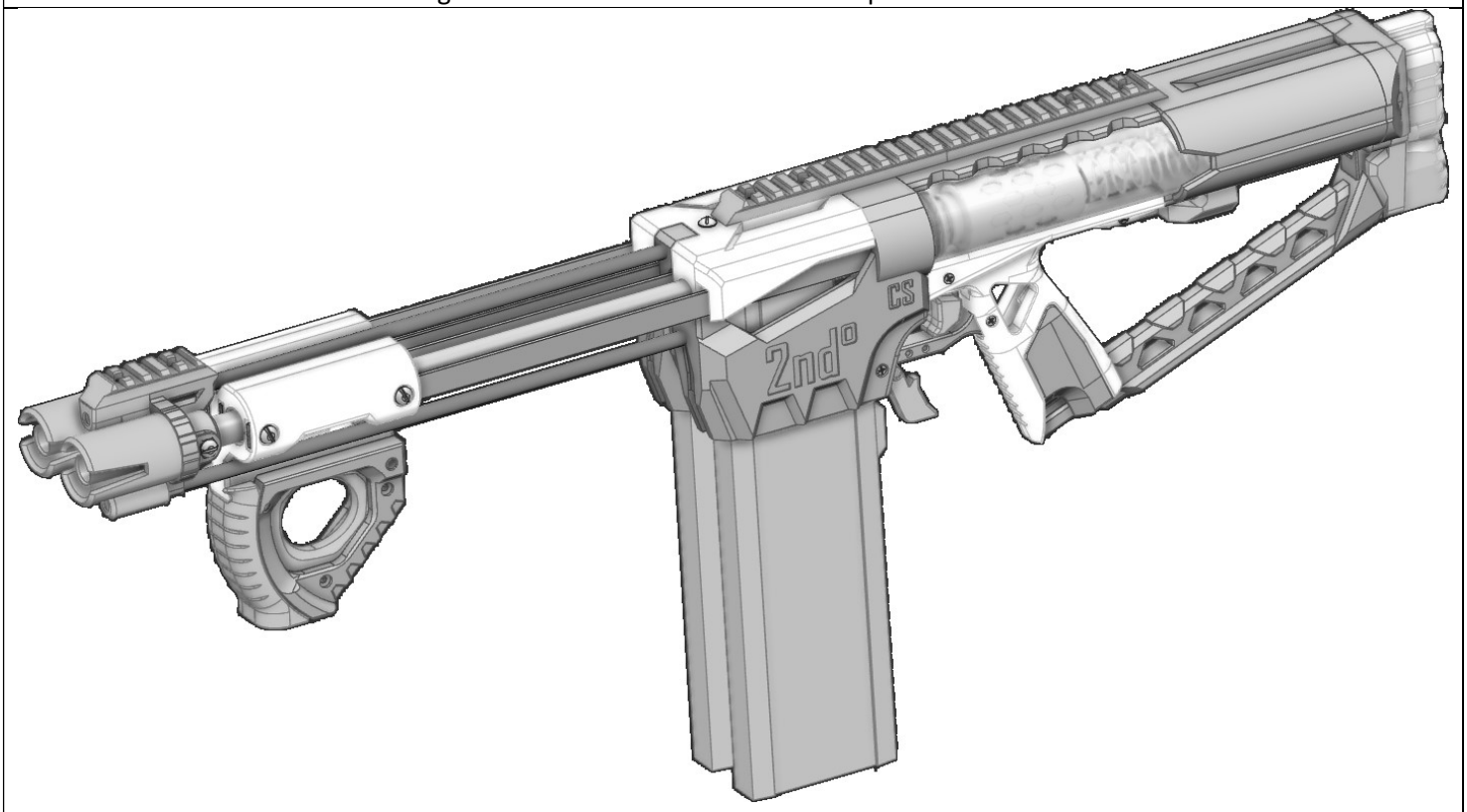
Add a hex nut to the very end of two 1-3/4” length screws, then use them to drive the hex nuts into the socket at the front of each spring guide at the front of the 2ndBackButt print. Unscrew the 1-3/4” length screws from the hex nuts. Then drive them into the back of the print and into the hex nuts from the back of the print. These screws will reinforce the spring guides and prevent them from breaking under cantilever loads.



Slide the 2ndBackButt onto each threaded rod and into both main springs. Secure it with a hex nut on the upper threaded rod only.



Slide the 2ndButtplate print onto all three threaded rods until it encapsulates the upper hex nut. Drive a 1-3/4” screw in through the hole in the middle of 2ndButtplate until secured.



Slide the foregrip back to compress the mainsprings until both plungers get engaged on the Sears.
With the breech OPEN install a Magazine loaded with darts into both magwells. Slide the foregrip all the way forwards to chamber the dart in the top of both of the Magazines. You can load up to three darts into each barrel at a time if desired by cycling the Foregrip back and forth multiple times prior to pulling the Trigger. ONLY PULL THE TRIGGER WHEN THE BREECH IS CLOSED AND THE FOREGRIP IS IN THE FORWARD POSITION. If you do not have a dart loaded in the barrel and need to pull the Trigger to de-prime the blaster, plug the end of the barrel with your finger before doing so.

Replacing the Main Spring does not require full disassembly of the Blaster. You just need to reverse the last 2 steps in these instructions in order to take the buttplate off.