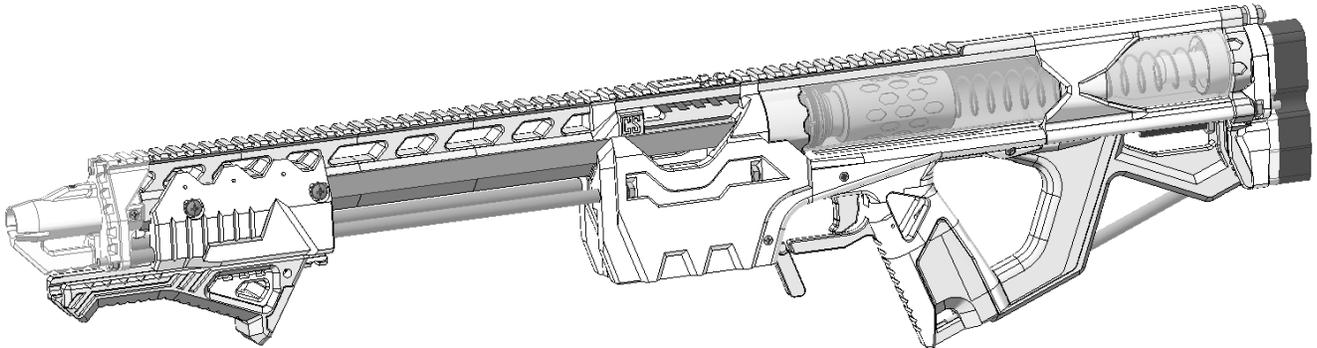


CALIBURN ASSEMBLY INSTRUCTIONS



The Caliburn is a Mag-Fed Pump-Action Homemade Nerf Blaster design released as a Public Domain 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.

The Following parts however ARE REQUIRED to be printed at 100% infill: Sear and Spreader

This Blaster is also offered in a version you can machine out of polycarbonate if you are interested in crafting one from scratch. The write-up and machining templates for that version are available at: <http://captainslug.com/caliburn.html>

Hardware kits and Full Blasters 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-spring/>



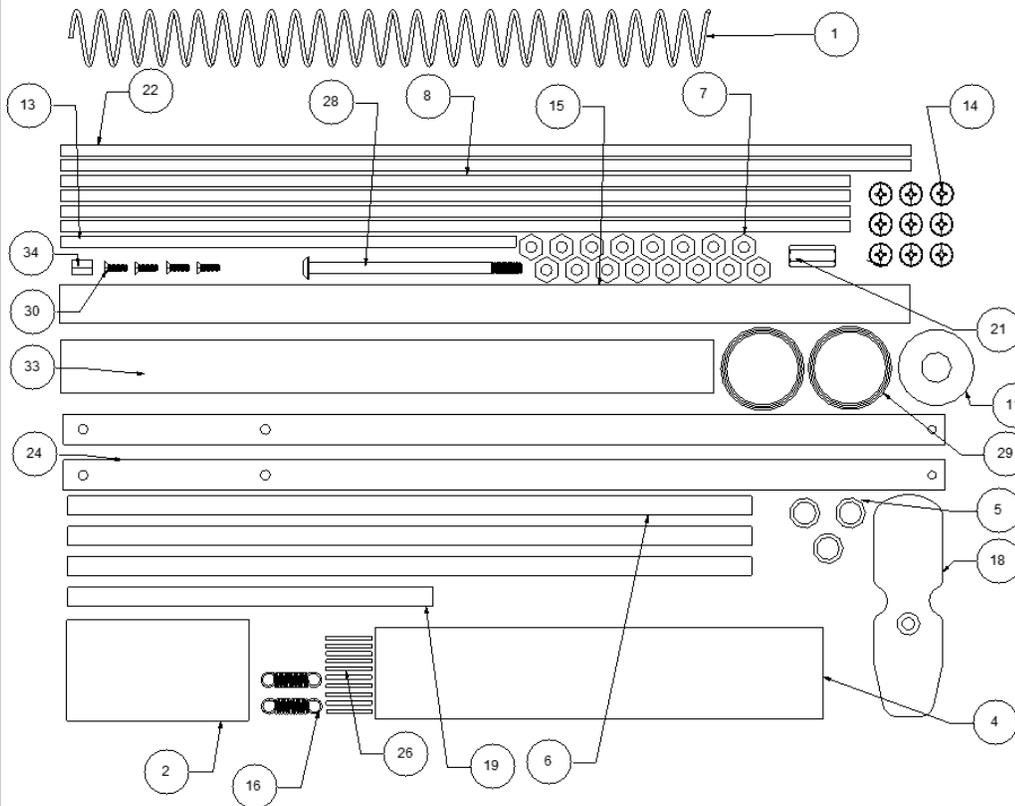
DO NOT STORE IN TEMPERATURES ABOVE 100F. Storing the blaster inside of a car in warmer months will cause the printed parts to distort or warp beyond their intended shape. If you have to store one in a vehicle, store it in the trunk.



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.



Item #	Quantity	Part Name
1	1	Spring
2	1	StockSpacerAlt2
4	1	Plunger Tube
5	4	012 O-Ring
6	3	11.25" Spacer
7	16	Locking Hex Nuts
8	4	13" Threaded Rod

11	1	ShockPad
13	1	8" Threaded Rod
14	9	10-32 Screws
15	1	Barrel
16	2	Extension Springs

18	1	ButtplateFoam
19	1	6" Spacer
21	1	Coupling Nut
22	2	14" Threaded Rod
24	2	BoltArm
26	10	Pin Short
28	1	Buttplate Screw
29	2	Dash 123 O-Ring
30	12	4-40 Short Screw

33	1	Barrel Shroud
34	1	4-40 Standoff

CALIBURN HARDWARE KIT

02/27/18

Printed/Cast Parts NOT included.

Tools needed: #1 Philips Screwdriver, Slotted Screwdriver, 3/8" Combination Wrench, Small Needle File,

For most of the above hardware list the quantities are the MINIMUM required for assembly. Easily-lost items will have several spare and I typically include extras of the majority of the items.

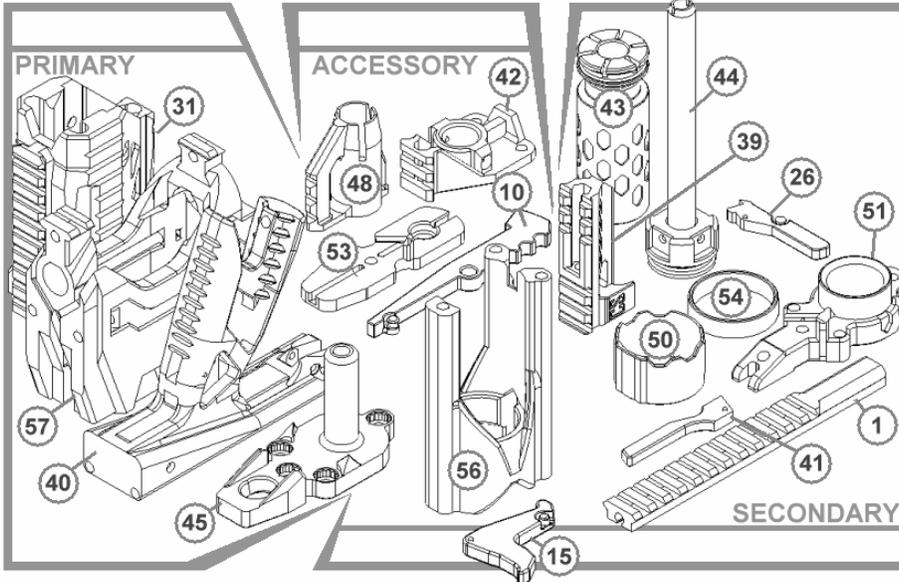
To assemble this blaster you will need a Slotted Screwdriver, Small Philips Screwdriver, 3/8" Combination Wrench, Needle-Nose Pliers (or hemostats), Round Needle File, and in some cases super glue.

The Plunger Tube 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.

CALIBURN PRINTED PART SET

06/12/18



Item #	Quantity	Part Name	Infill %
1	1	rail_top	20
10	1	Sear	100
15	1	TriggerAlt	20
26	1	MagRelease2	20
31	1	Rail_Foregrip	20
39	1	DartJem	20
40	1	Grip5	20
41	1	Tguard5	20
42	1	Muzzle4	20
43	1	PlungerE	20
44	1	Ram2	20
45	1	BackButtP	20
57	1	Magwell_Mono	20
48	1	Muzzle Brake2	20
49	1	Stock_Kiri	20
50	1	RyanTube	20
51	1	FrontButt7	20
53	1	ButtplateFlat	20
54	1	Ping	20
56	1	Stock_Kiri	20

OPTIONS

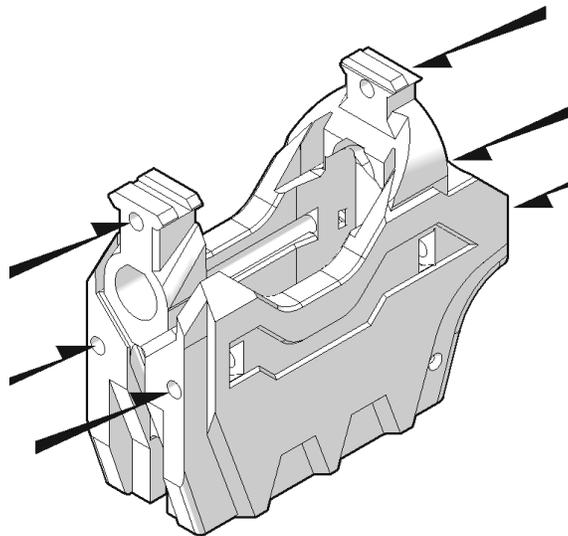
	Railgasm	RMAX
	AFG	AyyFG
	Ayy LMAO	
	Upgraded Ram	
	SCAR	VF1
	Grip Insert	
	Stock Upgrade	
	Iron Sights	

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

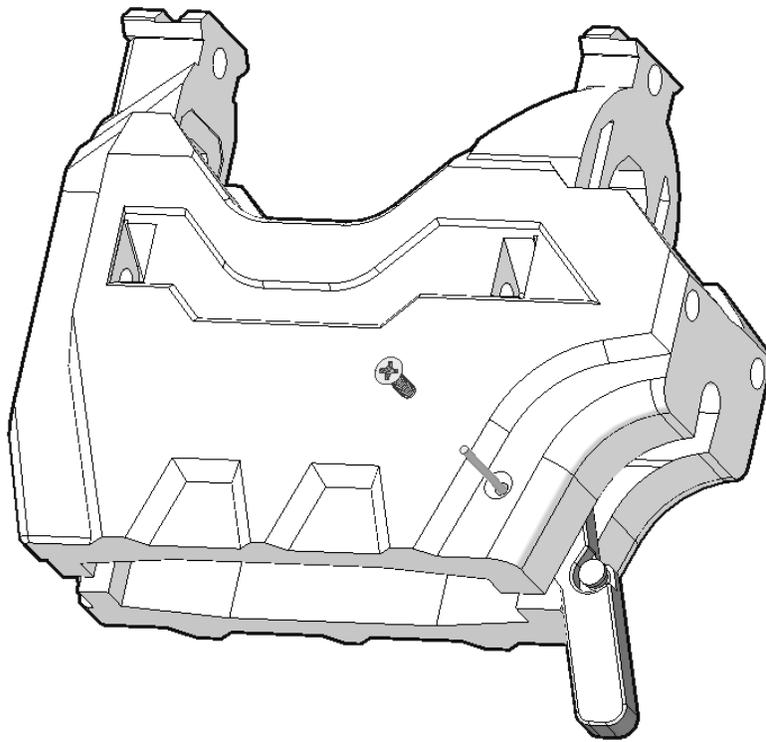
- Captain Slug

Assembly Instructions:
<http://www.captainslug.com/nerf/Caliburn3DPAssembly7.pdf>

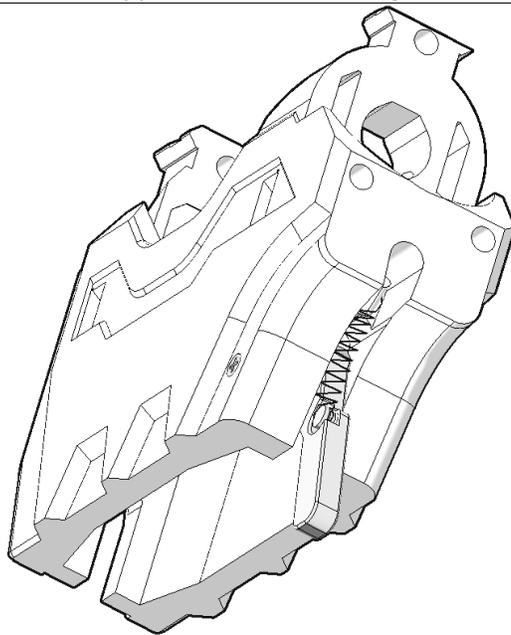
Above is a list of every printed part needed to assemble this blaster. The majority of the through holes should print to the required tolerance, but you will likely have one or two that may require minimal filing. Also make sure to trim off any burrs or oversized edges.



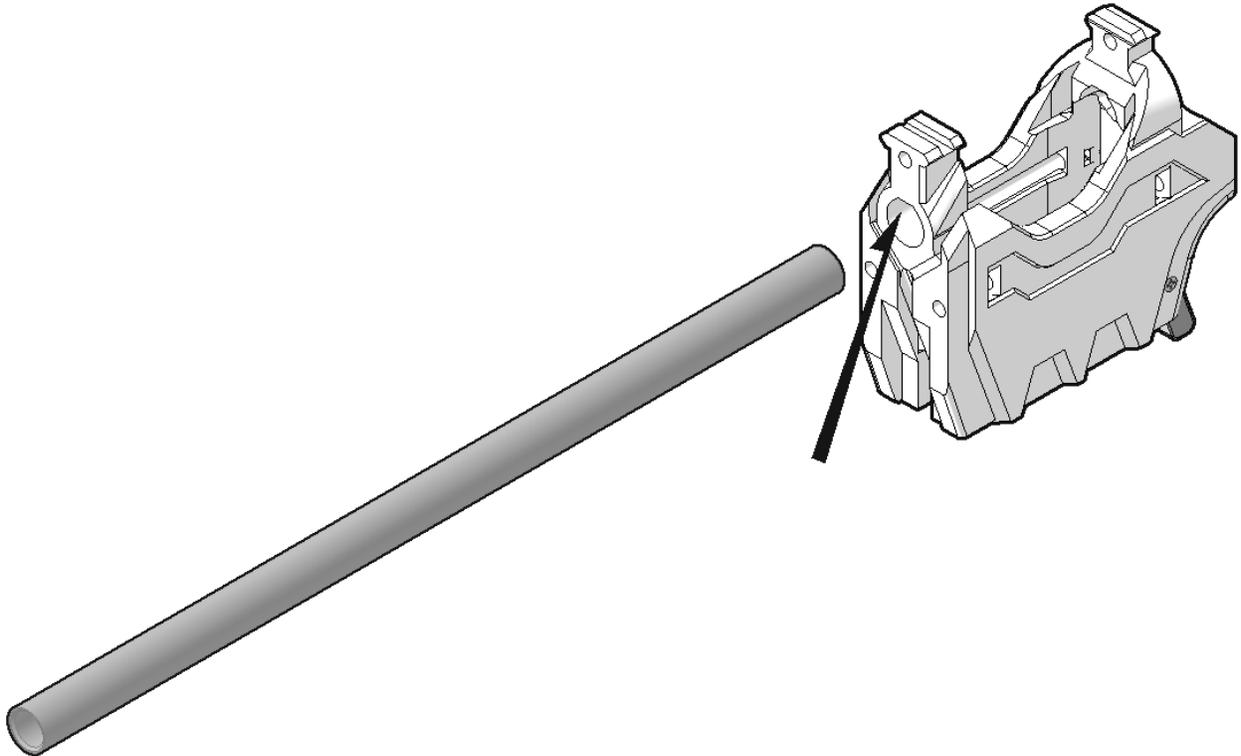
Check that the threaded rods fit into the indicated holes. If they do not, touch up the inside of the holes with a small needle file until they do.



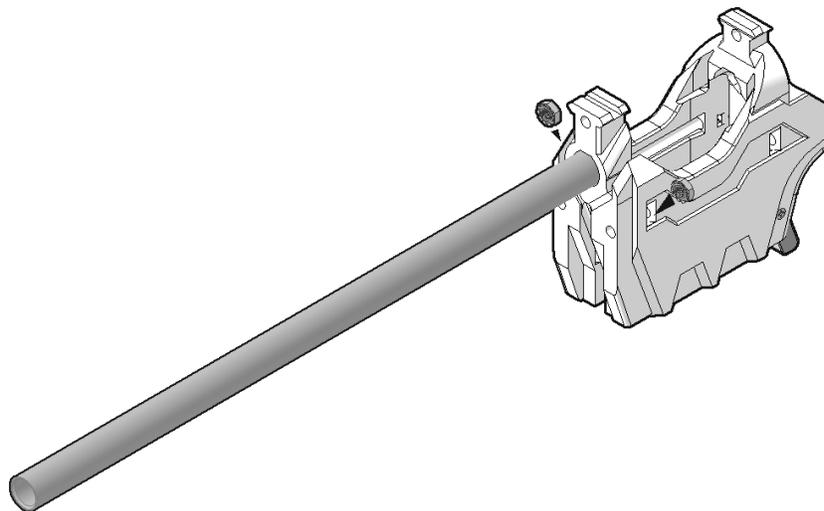
Check the hole in MagRelease for obstructions or burrs and remove them if present. Line up the hole in it with the indicated hole in the Magwell. Insert a Short Pin through the Magwell and into the MagRelease. You can use an extra Short Pin and a Hammer to push it into place. Use a 4-40 screw and a screwdriver to plug the open hole. Repeat for the opposite side of the Magwell.



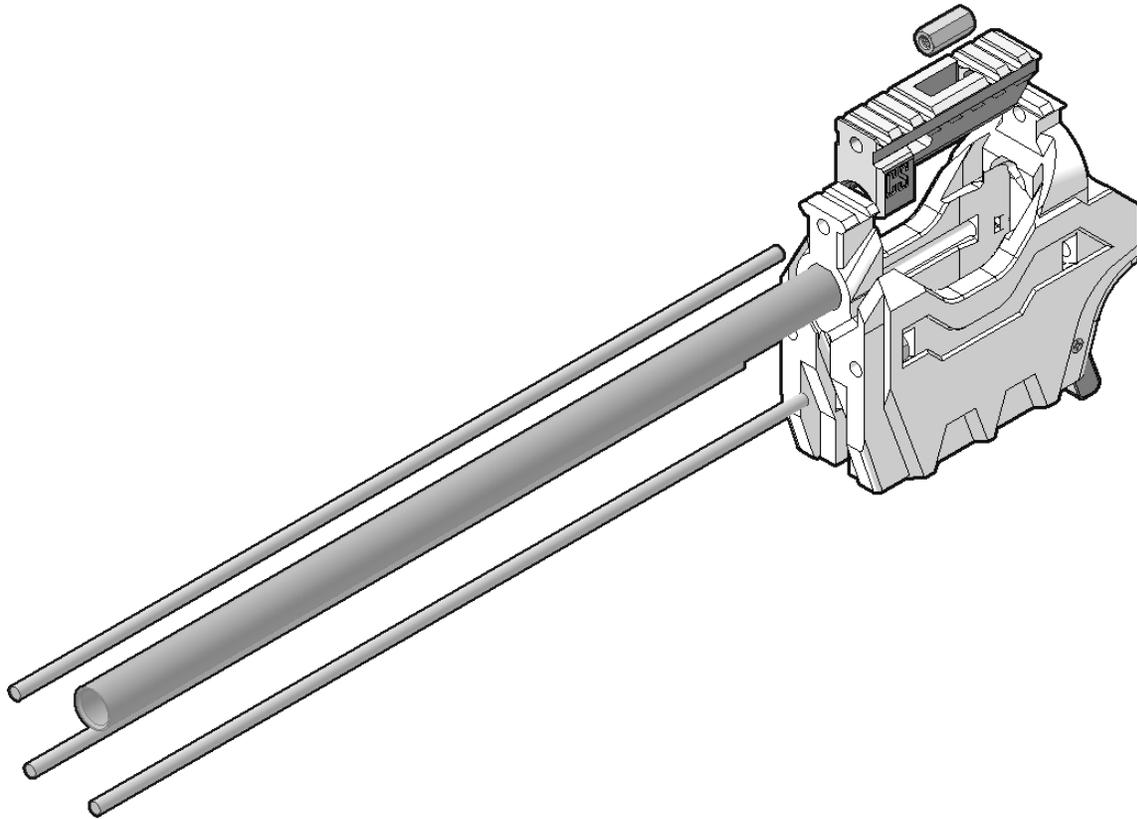
Make sure that the MagRelease can rotate freely on the Short Pin. If it cannot, back one of the 4-40 screws out a little until it does. Hook one end of an extension spring onto the printed arm inside the back of the Magwell. Hook the opposite end of the extension spring onto the peg on the MagRelease.



Check the fit of the Barrel inside the barrel hole of the Magwell. If it does not fit you will need to touch up the spot indicated with a round file. Install the barrel in the hole so that the back of it is flush with the inside of the Magwell

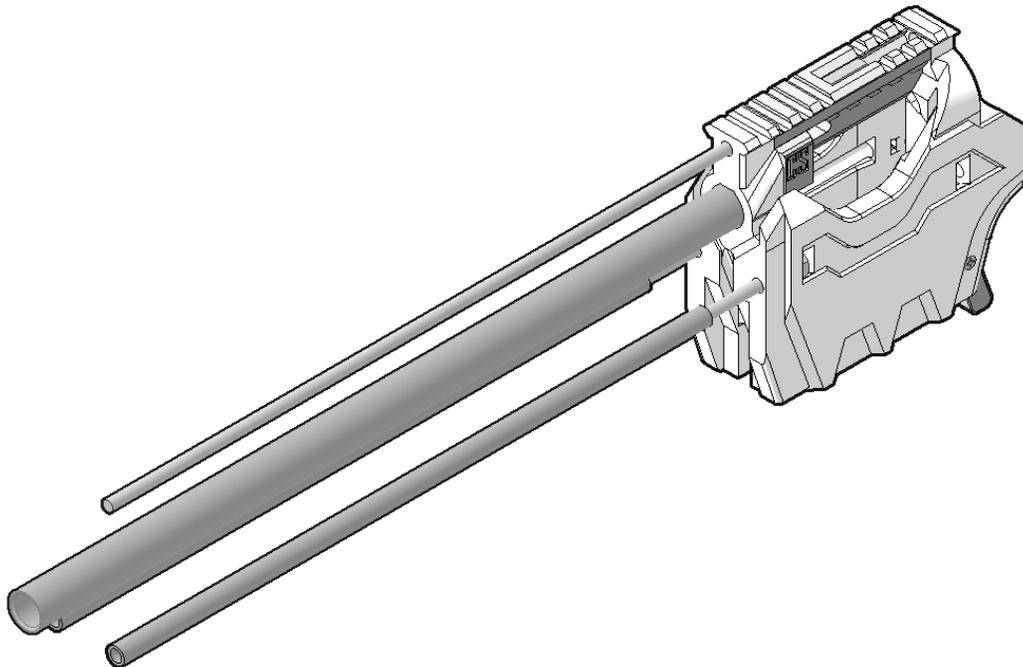


Slide a hex nut into the two slots where indicated so that the toothed washers are facing forwards. You may need to use a flat screwdriver to push them down to the bottom of the slots.

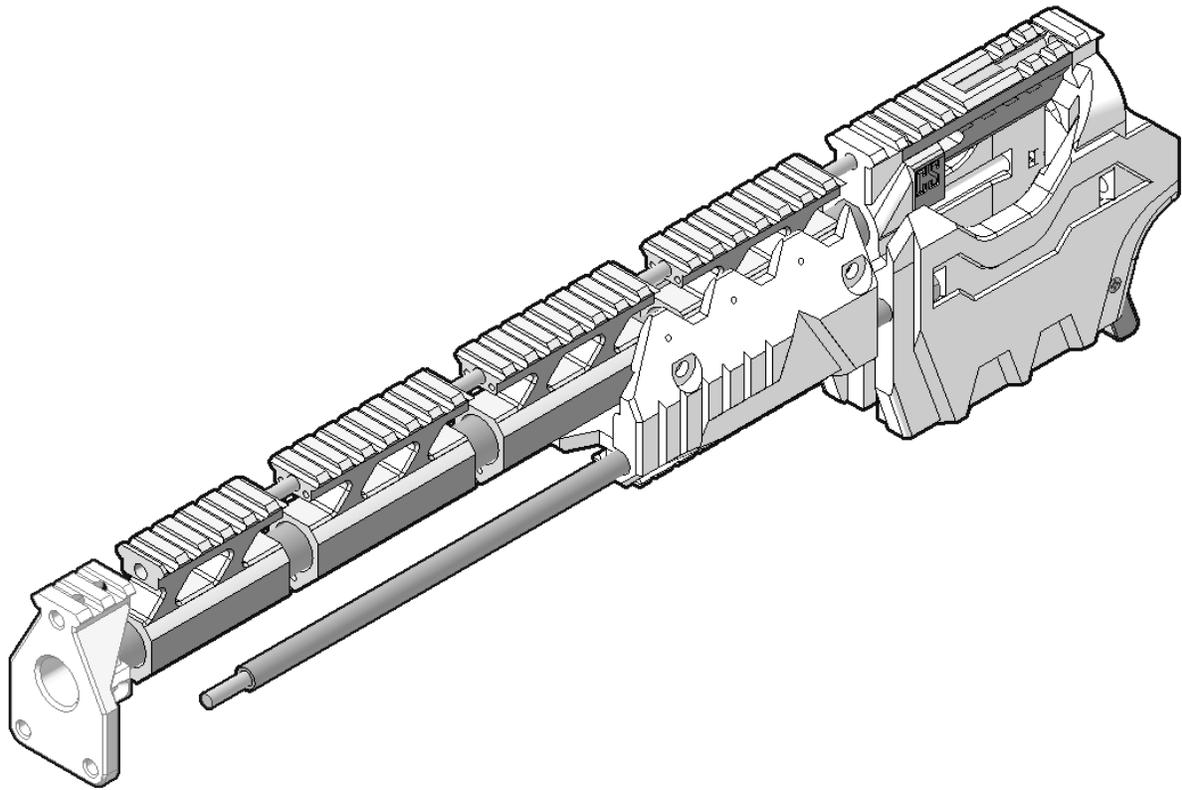


Screw two 13-inch length threaded rods into those hex nuts from the front of the Magwell. If extra leverage is needed add an acorn nut to the opposite ends of the threaded rods so that you can use a wrench to tighten them into the hex nuts.

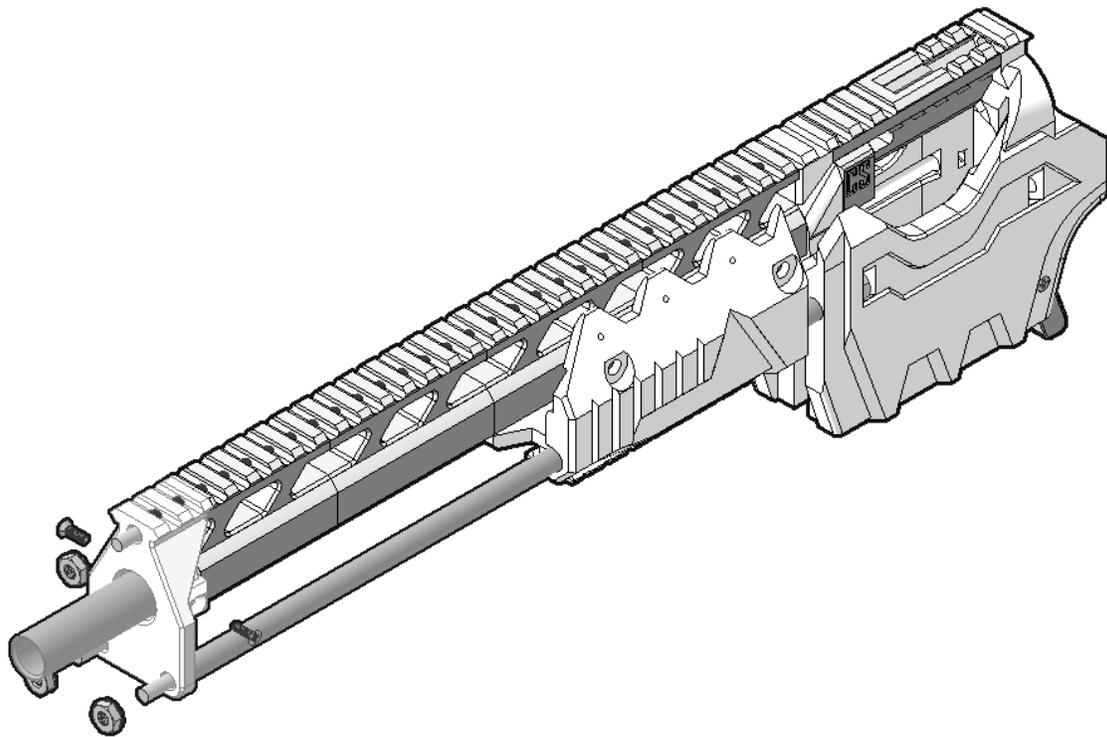
Add a coupling nut to the slot in the top of the DartJam piece (or in through the back if part isn't as shown). Slide Dartjam into the top of the Magwell so that it lines up with the holes. Screw a 14-inch length threaded rod into the DartJam from the top hole in the magwell.



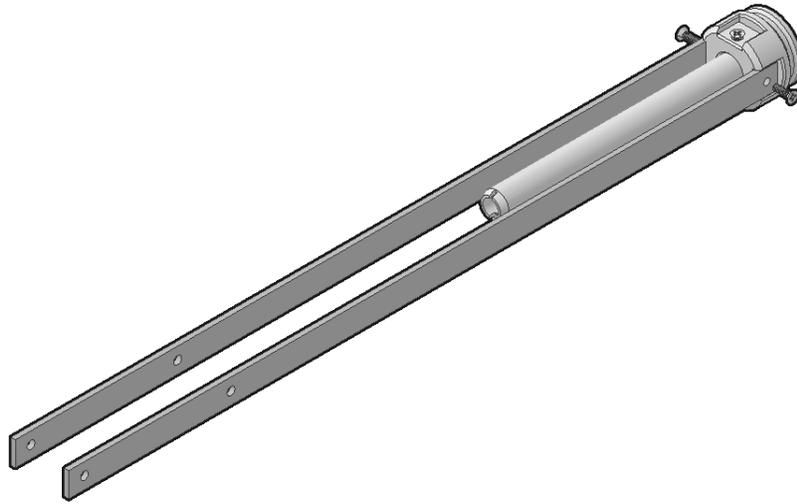
Slide two 11-1/4" long nylon spacers over the two lower threaded rods.



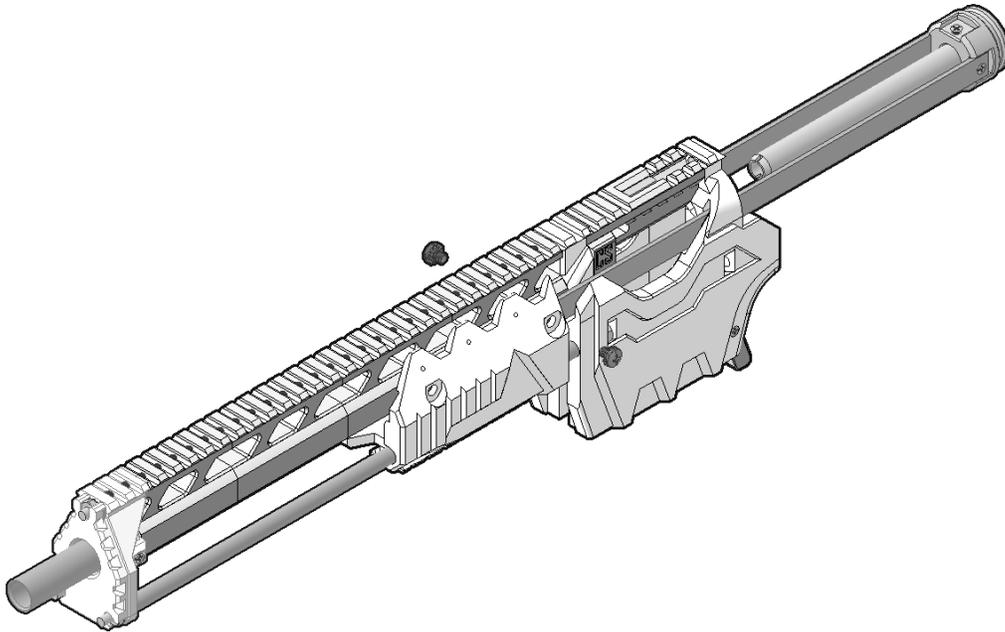
Slide the Base Foregrip over the nylon spacers.
Then slide the Barrel Shroud (or Barrel Shroud Accessory Parts) over the barrel. If you do not have the barrel shroud segments, slide a third 11-1/4" long nylon spacer over the upper threaded rod.
Then Slide the Muzzle onto the end of the Barrel.



Add a hex nut to the end of each threaded rod and tighten them.
Confirm that the back of the barrel is still flush with the inside of the Magwell.
Drive 4-40 screws into both sides of the Muzzle piece so that they bite into the sides of the barrel. Do not overtighten.

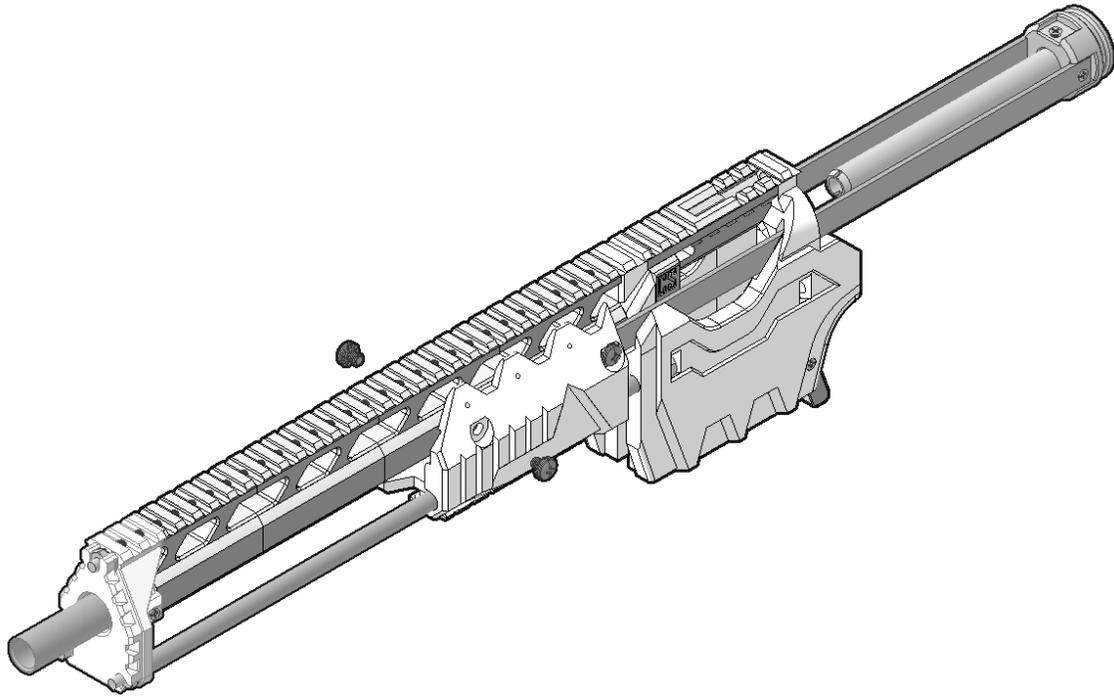


If it is present, add a 012 o-ring to the undercut in the ram.
Secure the Bolt Arms to the ramrod with two 4-40 screws. **DO NOT OVERTIGHTEN**

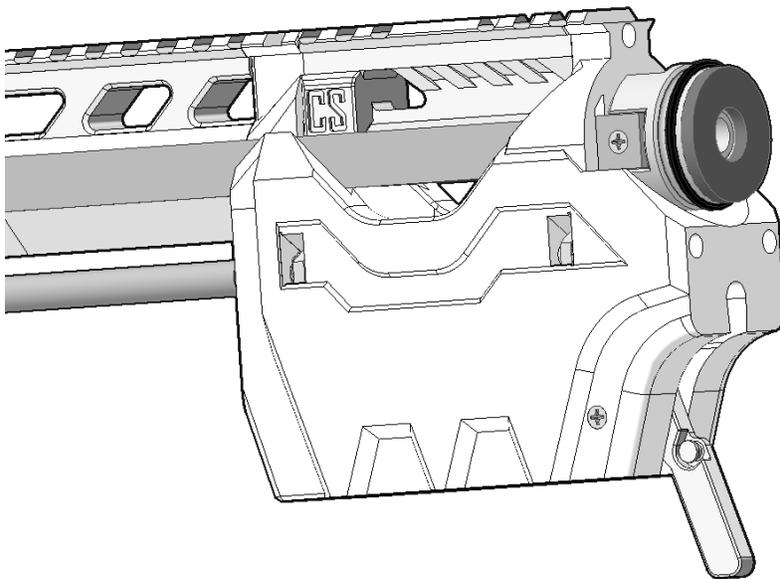


Slide the Bolt Assembly forward through the slots in the magwell.

Slide the Foregrip back over the aluminum straps (Bolt Arms) until the threaded holes line up with the holes in the Foregrip. Secure them together at the rear pair of holes using two short 10-32 screws.

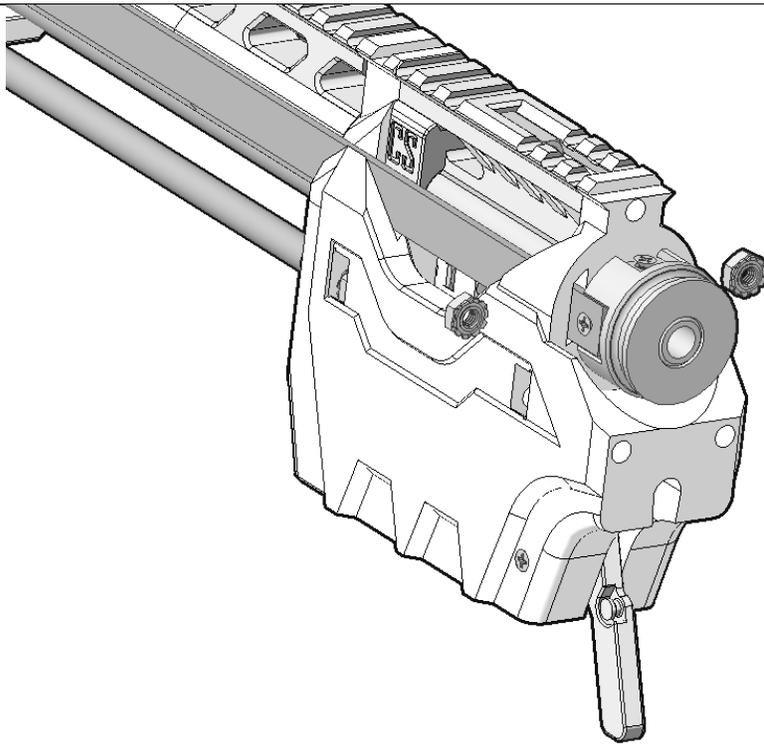


Secure the front half of the Foregrip with two more short 10-32 screws. Then slide the Foregrip forward and make sure the the Ramrod is entering the Barrel during this action. If it isn't doing so smoothly double-check its alignment.

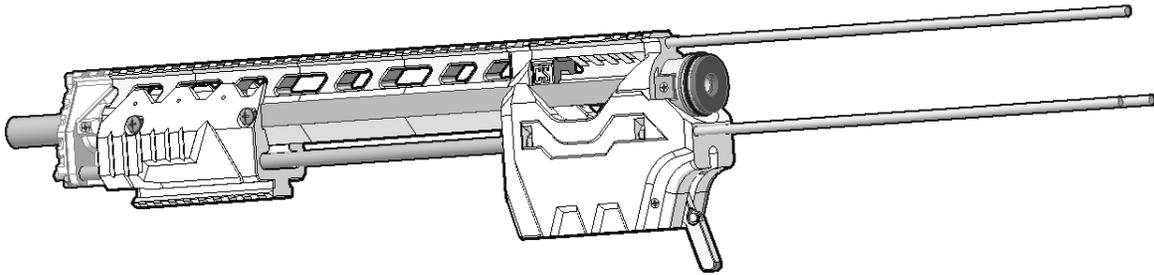


Add a 123 o-ring to the rear undercut of the Ramrod. Then remove the backing paper from the Shockpad and adhere it to the back of the Ramrod.

The assembly of the front half of the blaster is now complete.

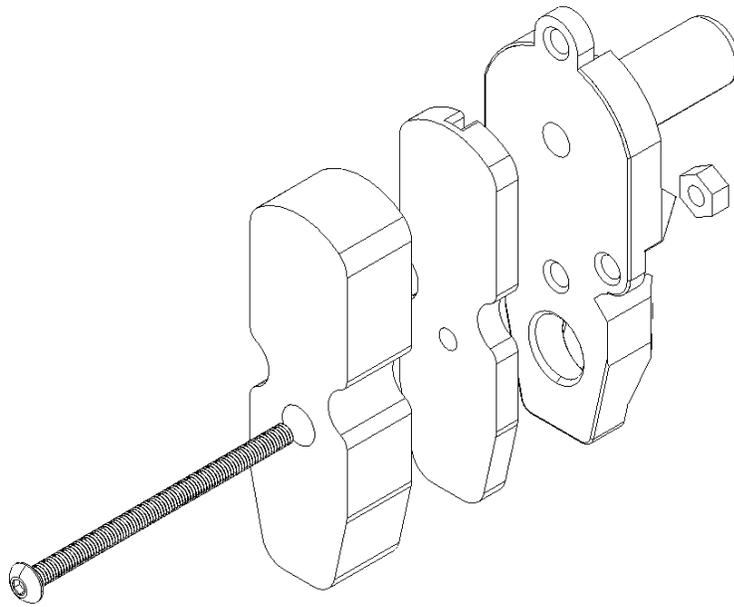


Add a hex nut to each slot in the rear portion of the magwell.

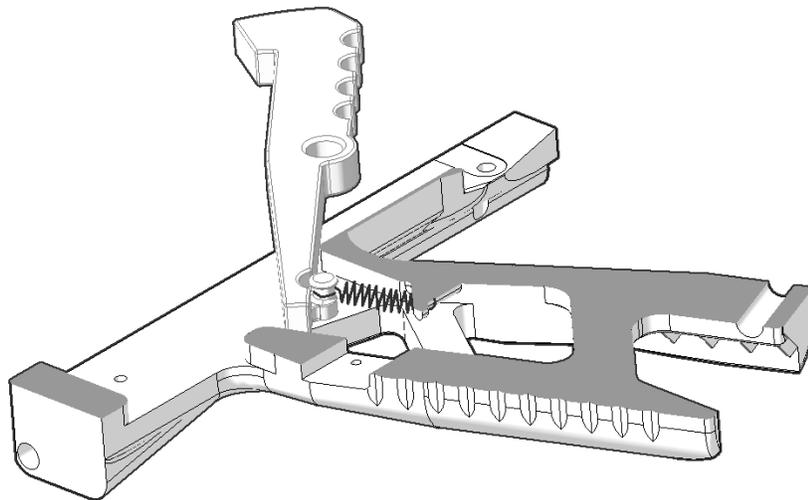


Screw a 14-inch long threaded rod into the Coupling Nut through the upper hole in the Spreader. If it does not want to go through the upper hole in the Spreader, touch it up with a small needle file.

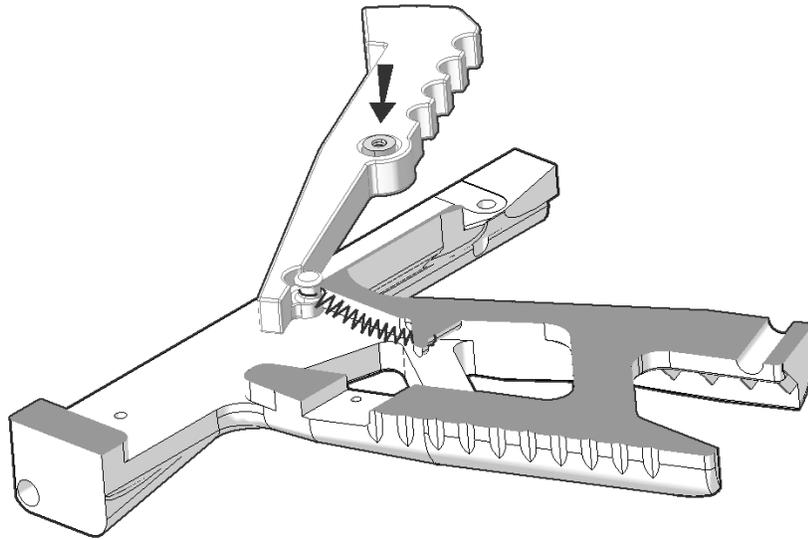
Screw a 13-inch threaded rod into each of the hex nuts you installed in the slots in the Spreader.



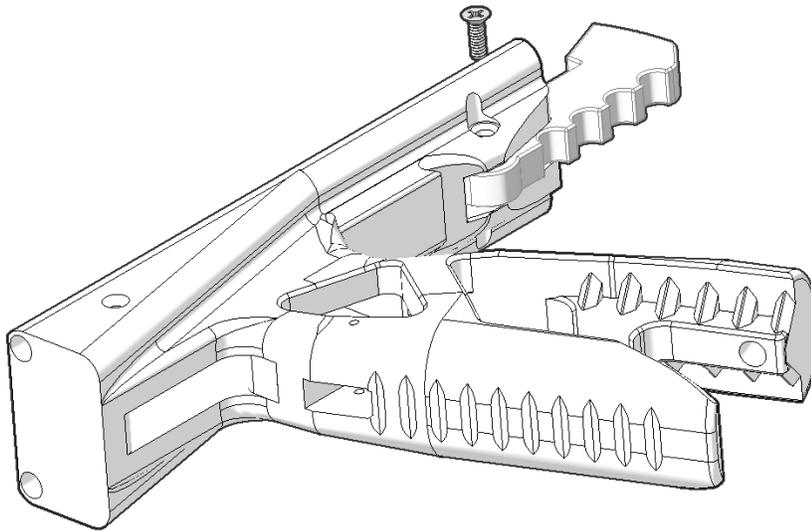
Adhere the Buttplate Foam to the Buttplate. Attach the Buttplate to "Back Butt" using the Long Screw and a Hex Nut. Set aside for later.



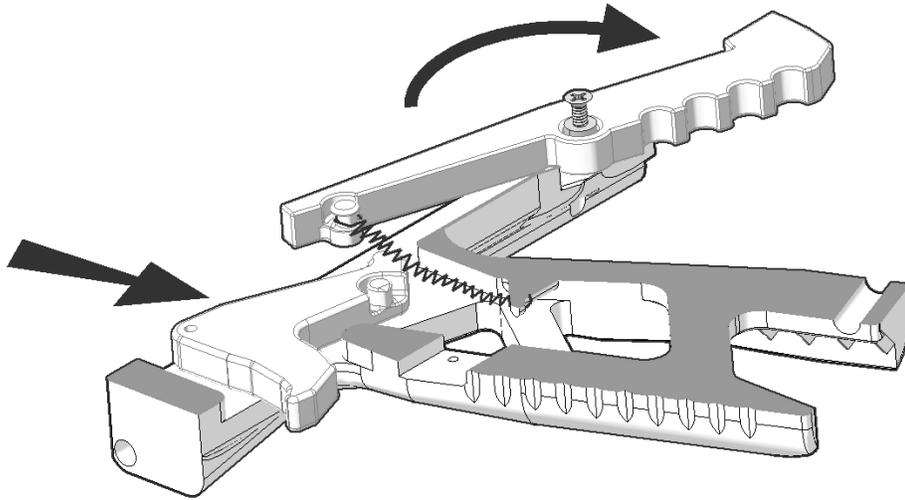
Add an extension spring to the peg on SEAR and use SEAR to fish the extension spring into the grip. Push the loop of the extension spring onto the hook inside of the grip.



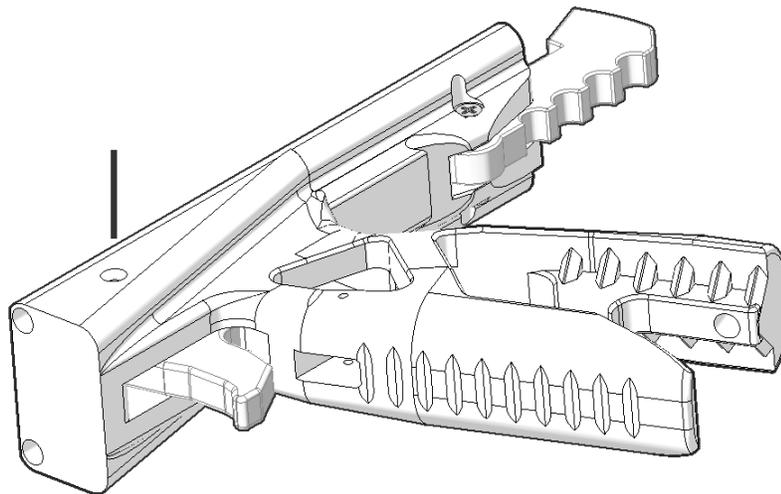
Insert the 4-40 standoff into the center hole of the SEAR and pivot it down towards the back of the grip.



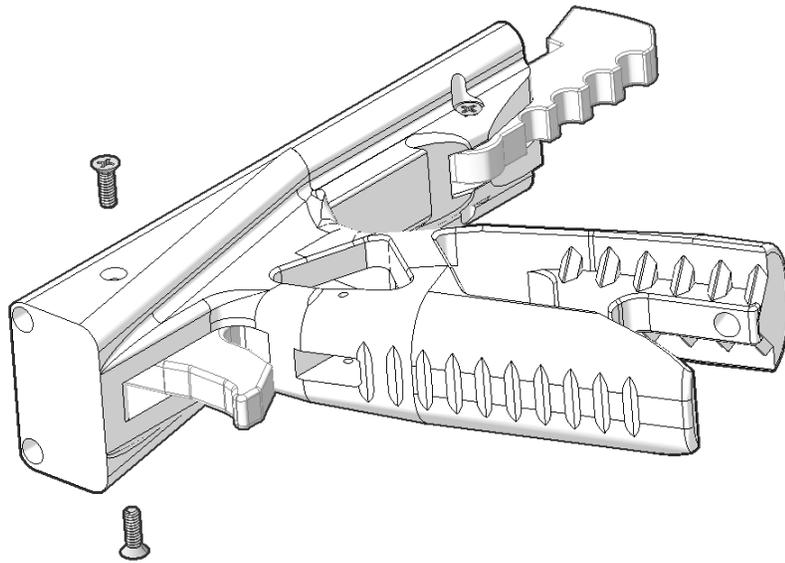
Use two short 4-40 screws to secure the standoff to the back of the grip.



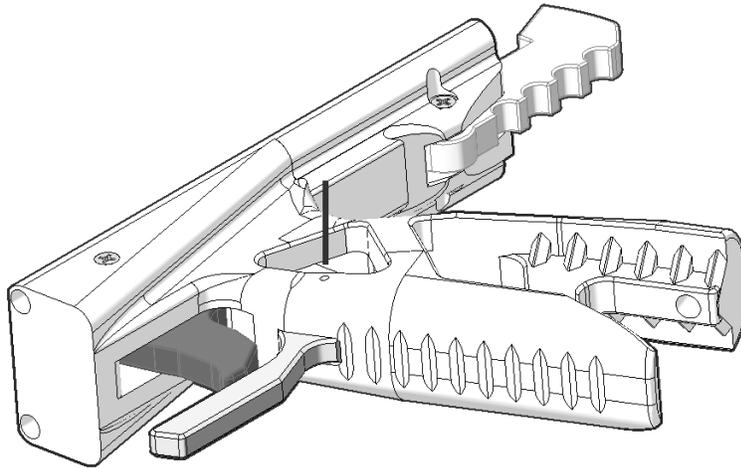
Fish the TRIGGER in through the front of the grip. You may need to pivot the SEAR back in order to get the TRIGGER in place. Once in place, the bump on the back of TRIGGER needs to sit underneath the front lip of the SEAR.



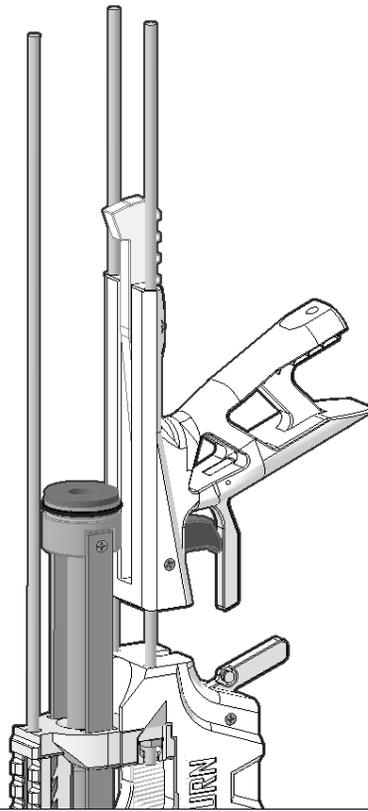
Slide a Short Pin in through the side of the grip and through the hole in the TRIGGER. You may need to use a 1/16" drill bit or another Short Pin and a hammer to lightly tap it through the trigger.



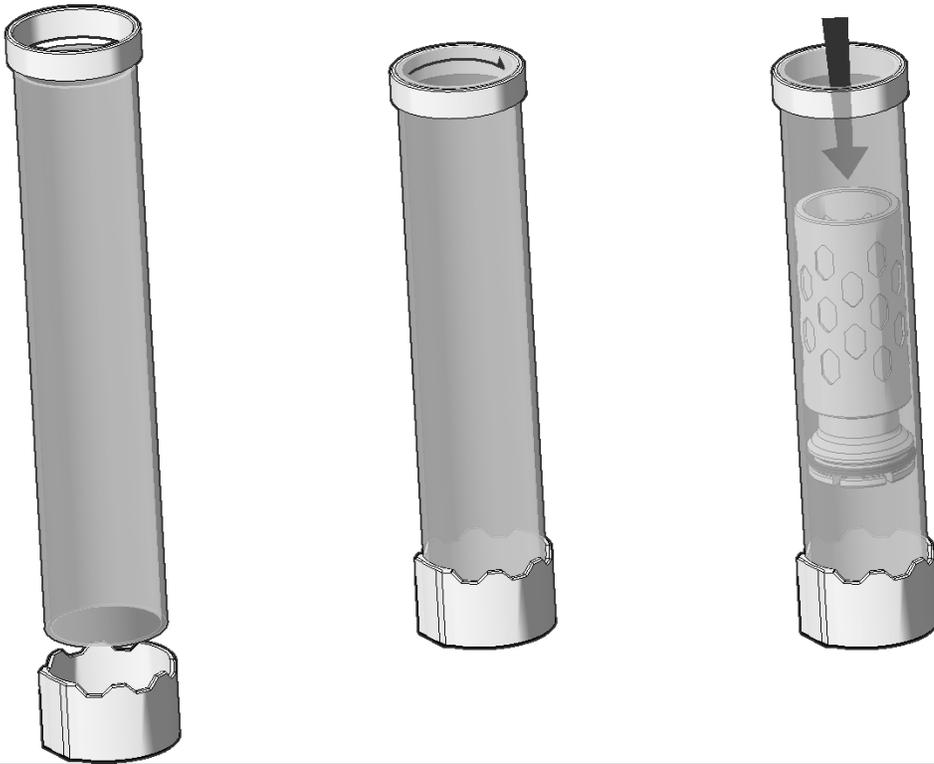
You can use a 4-40 short screw on each side of the grip to retain the Short Pin for the trigger.



Slide the Tguard piece into the slot in the front of the Grip.
Insert another short pin into the grip and through the TGUARD piece to secure it. Tap it into place lightly with a hammer if needed. If the fit was too loose, apply from super glue and set it aside to dry.



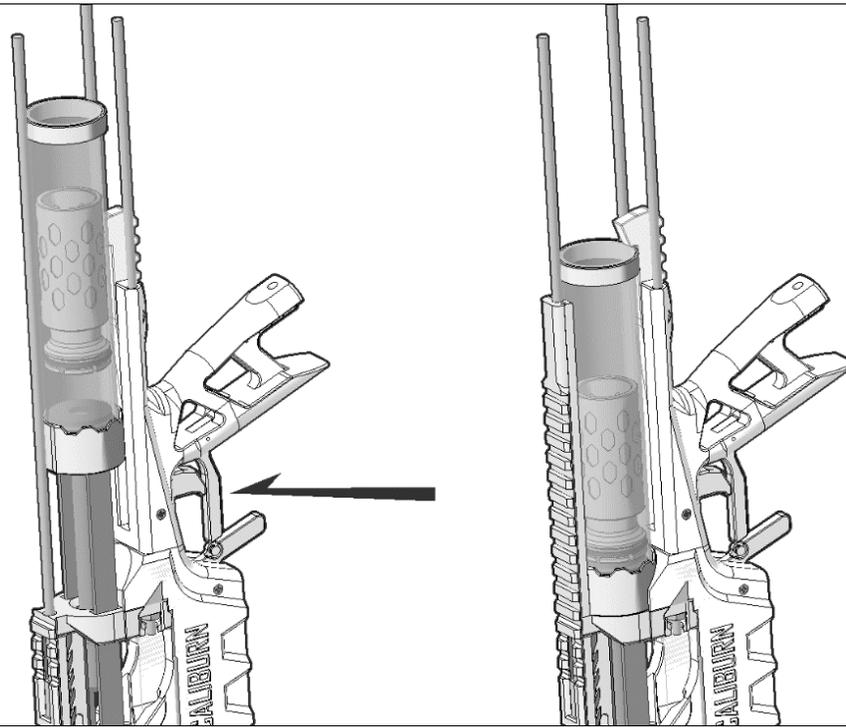
Slide the completed Grip assembly onto the 13" Threaded Rods.



Installed a Ryan Tube onto one end of the Plunger Tube. Use a hammer to push it on until it is flush with the end of the tube. Install the Ring on the opposite end until it too is flush.

If they however both fit loosely secure them with super glue.

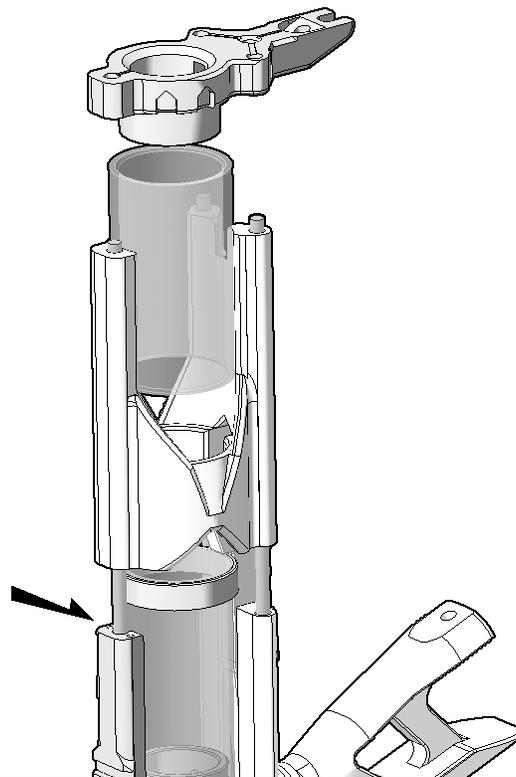
If not already present, apply clear silicone grease to the inside of the Plunger tube at the end with the Ring. Add a 123 o-ring to the undercut in the Plunger, then slide it into the plunger tube through the lubricated end.



Slide the Foregrip and Ramrod back a few inches. Hold down the trigger down and work the front end of the Plunger Tube assembly onto the back of the Ramrod O-Ring. Align the flat side on the Ryan Tube with the 14-inch long threaded rod.

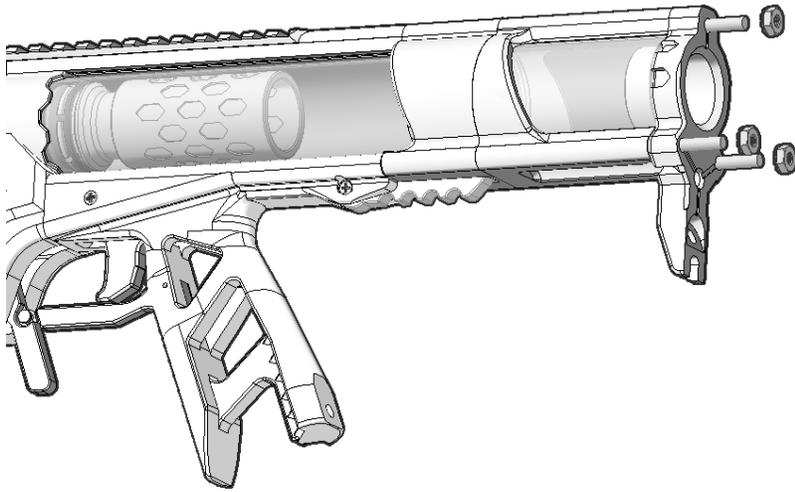
Slide the Ramrod and Plunger Tube forward together.

Slide the Rail_Top part onto the 14-inch long threaded rod and wedge it against the flat side of the Ryan Tube.

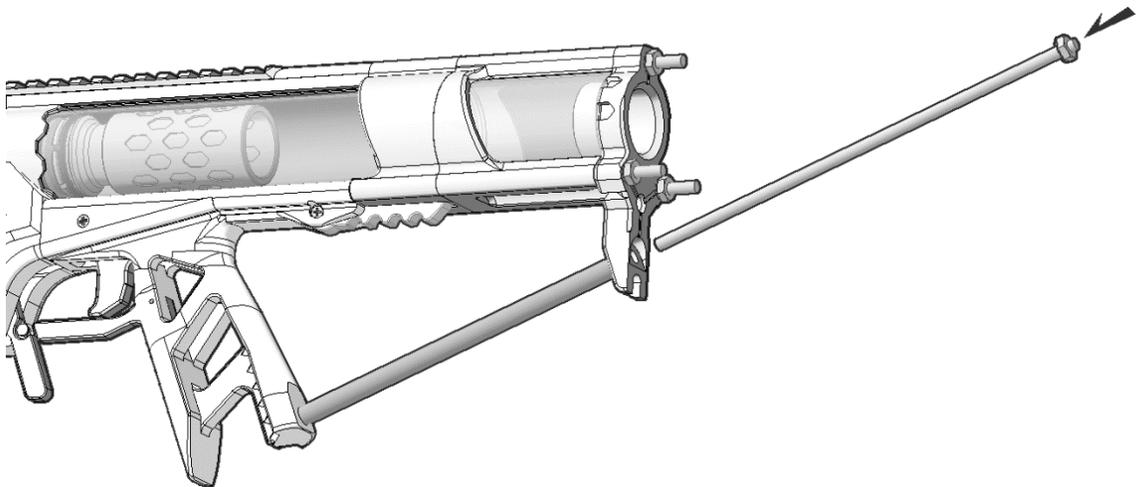


Add two short pins where indicated. Then slide the Stock_Alt part onto all of the threaded rods, and then onto the short pins.

Then slide the rest of the components into place as shown: "Stock_Kiri and FrontButt"



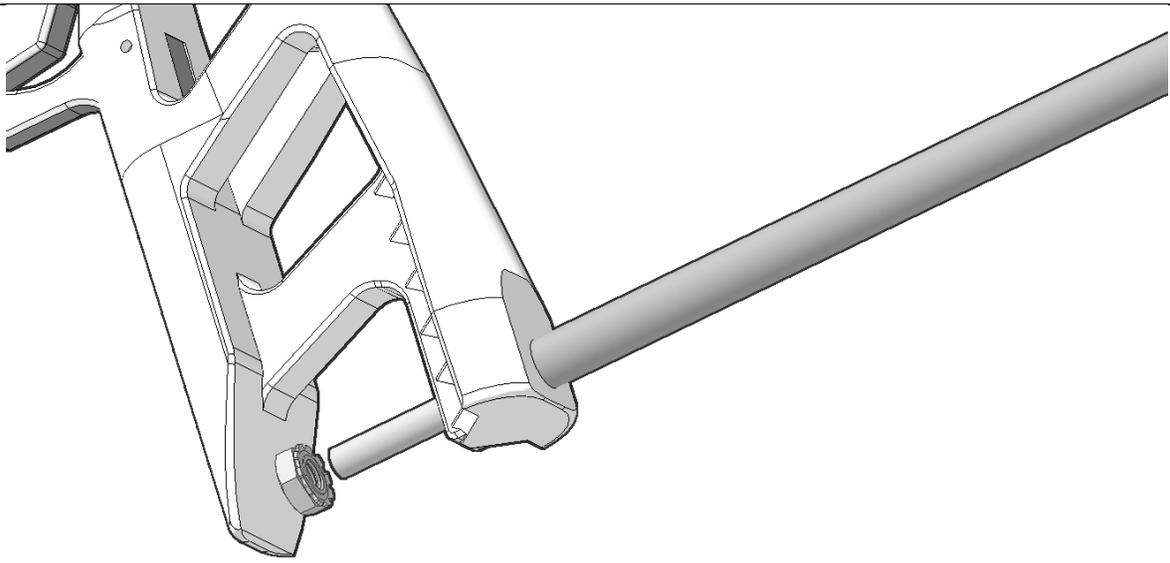
Add a Hex nut to each of the threaded rod ends and tighten them.



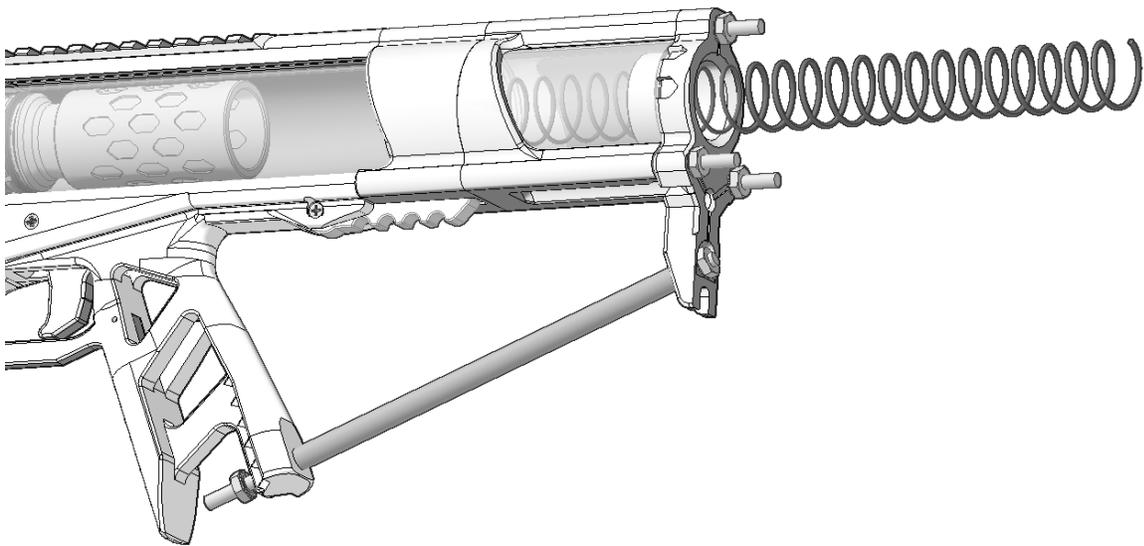
If included, slide the Grip Insert into the Grip, then wedge a Hex Nut into the slot in the underside of it.

Wedge a nylon spacer between the heel of the grip and the end of "FrontButt". Or alternatively one of the Cosmetic Stock Spacer Options.

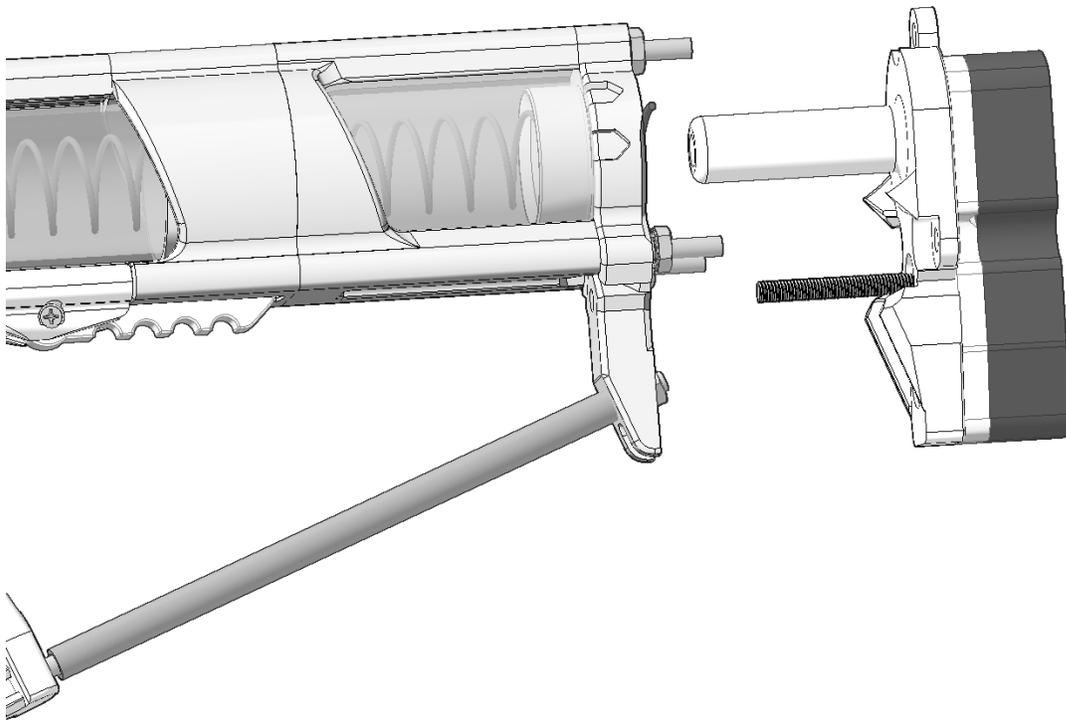
Add a Hex nut to the end of the 8-inch long threaded rod, then feed it in through the lowest hole of FrontButt, through the Stock Spacer, and through the hole in the heel of the Grip.



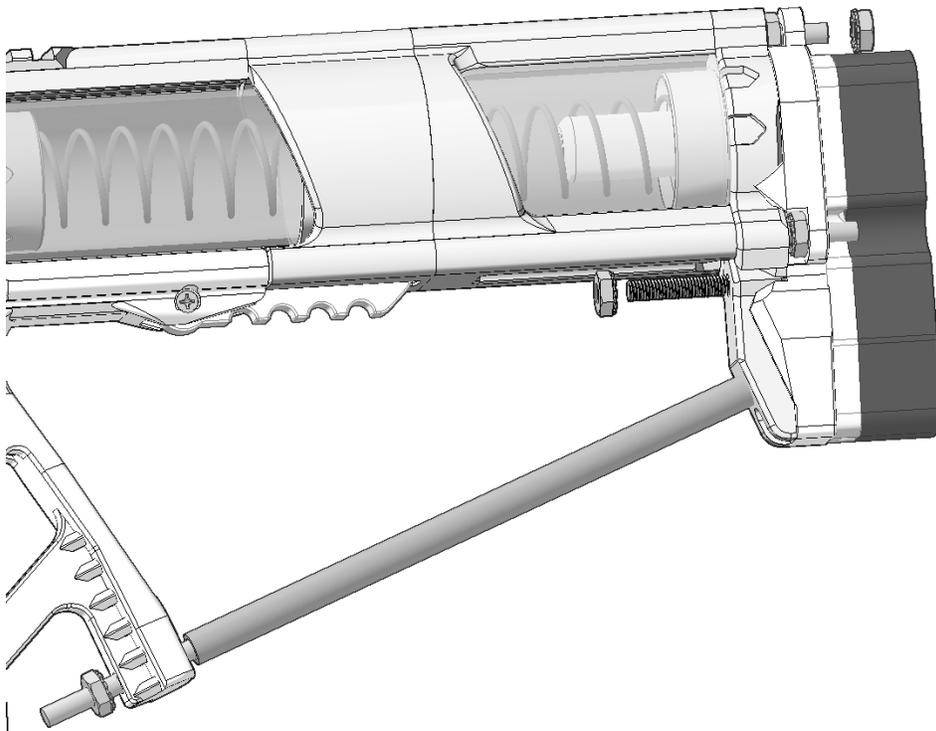
If the Grip Insert was not included/purchase, add a Hex nut to the exposed end in the Grip.



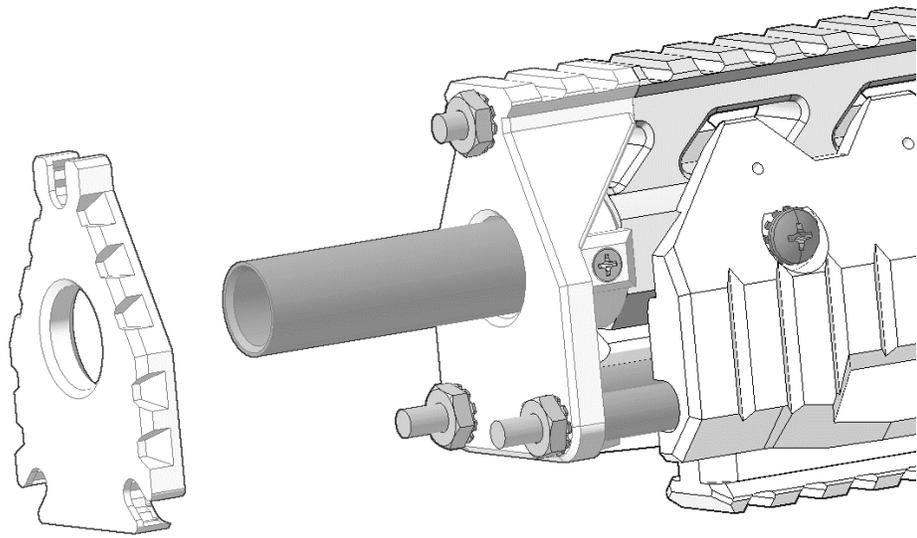
Install the Main Spring of your choice.



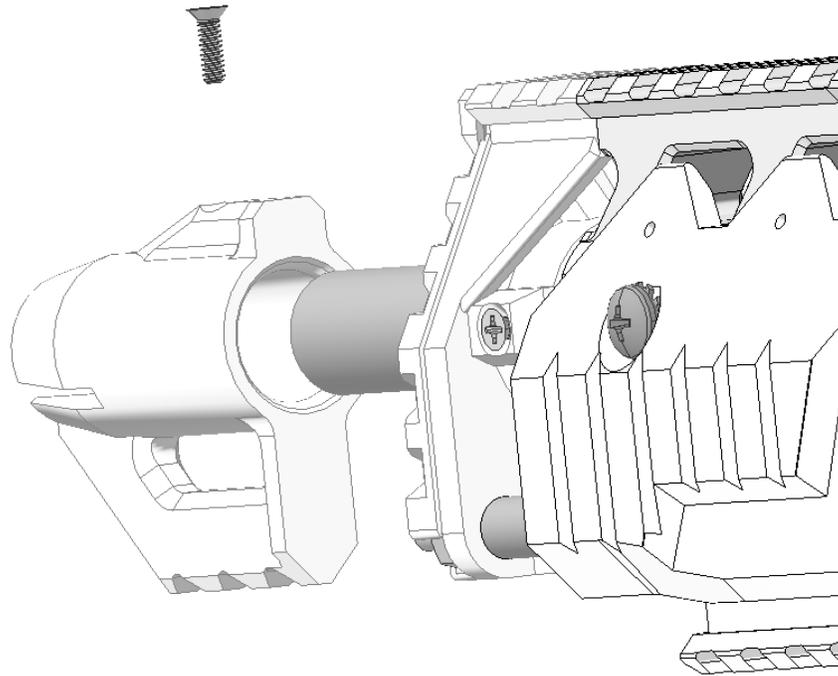
Align all of the Hex nuts parallel with the FrontButt itself.
Install the ButtPlate Assembly onto the Main Spring and into the center hole of FrontButt until it encapsulates the Hex nuts.. If it fails to do so, recheck alignment of the Hex Nuts.



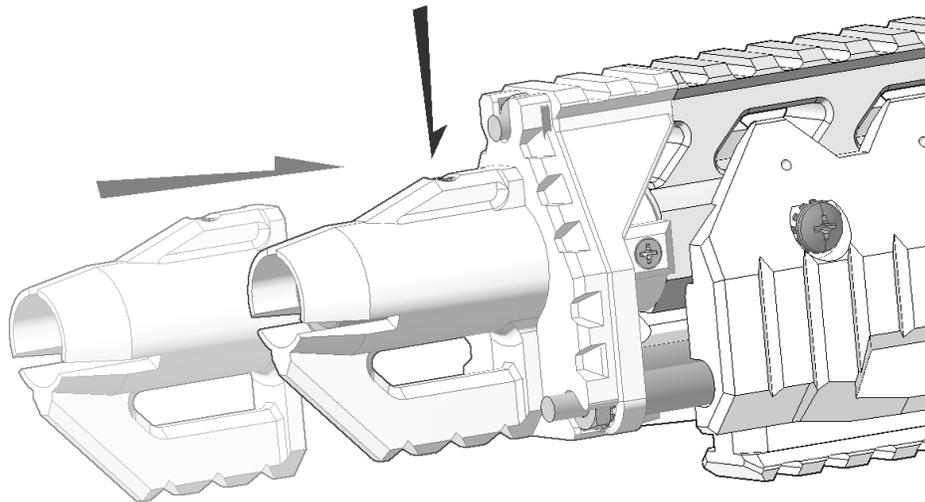
Add a hex nut to the exposed upper threaded rod and tighten it. Add a hex nut to the long screw and tighten it.



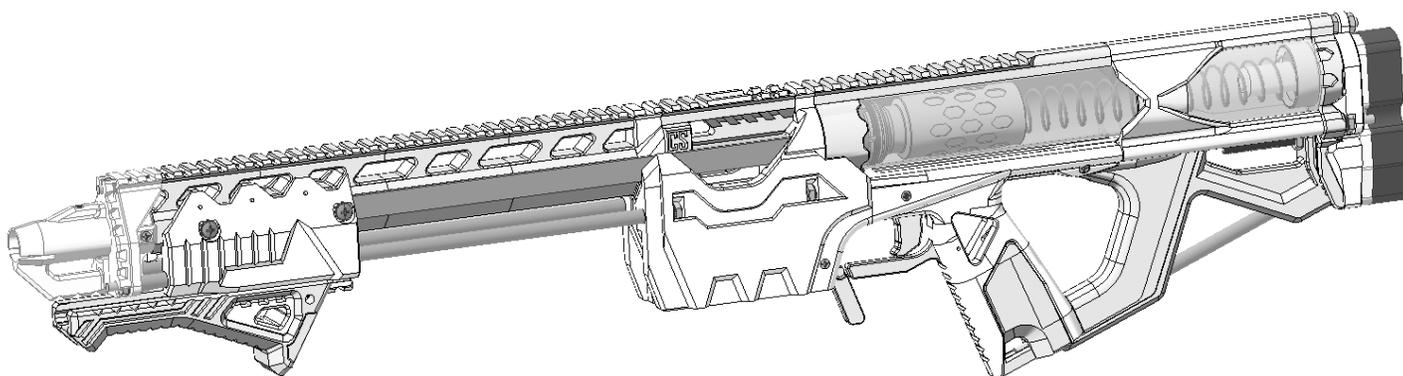
If Included/Ordered, slide the Trench Plate onto the barrel. Make sure all the flats on the Hex Nuts are parallel with the sides of the Muzzle as shown. Then push the Trench Plate onto the Hex Nuts until it encapsulates them.



DRIVE A 4-40 SCREW INTO THE HOLE ON THE TOP SIDE OF THE PRINTED PART. Drive it in until just before it starts to poke through to the inside of the part. If the slot is present follow the instructions below.



Slide the Muzzle Brake into the barrel. If it fits too tightly you may need to touch up the inside of it with a round needle file. Or if it fits too tightly and is marring the outside of the barrel, you may need to loosen the 4-40 screw a quarter turn. Once you are happy with the fit and placement of it, you can tighten the 4-40 screw until it bites into the barrel.



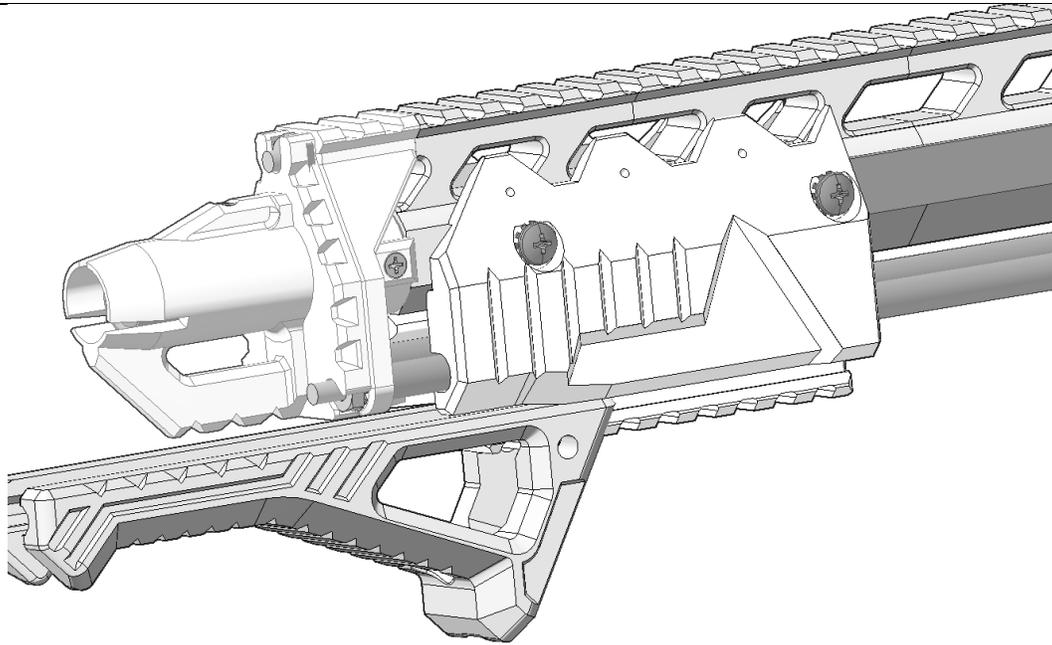
Slide the foregrip back to compress the mainspring until the plunger gets engaged on the Sear. With the breech OPEN install a Magazine loaded with darts. Slide the foregrip all the way forwards to chamber the dart in the top of the Magazine. You can load up to four darts into the barrel at a time if 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.

The Blaster and Hardware Kits are shipped with K26 and K25 springs. The K25 is rated slightly lower than the K26. The alternate spring options are the K31 and 788 which both have to be purchased separately or opted for as a replacement. Either are recommended for indoor use, or for younger players.

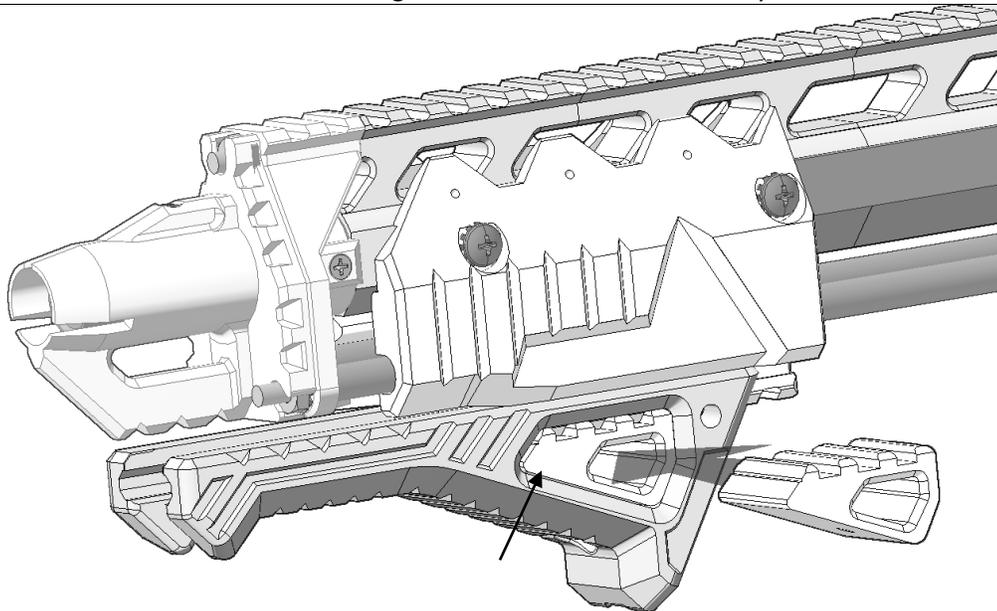
To reduce the performance of the Blaster by 10% to 20% the Ram can be operated with the O-Ring removed/absent without any issues.

ADDENDUM: Installation of Accessories



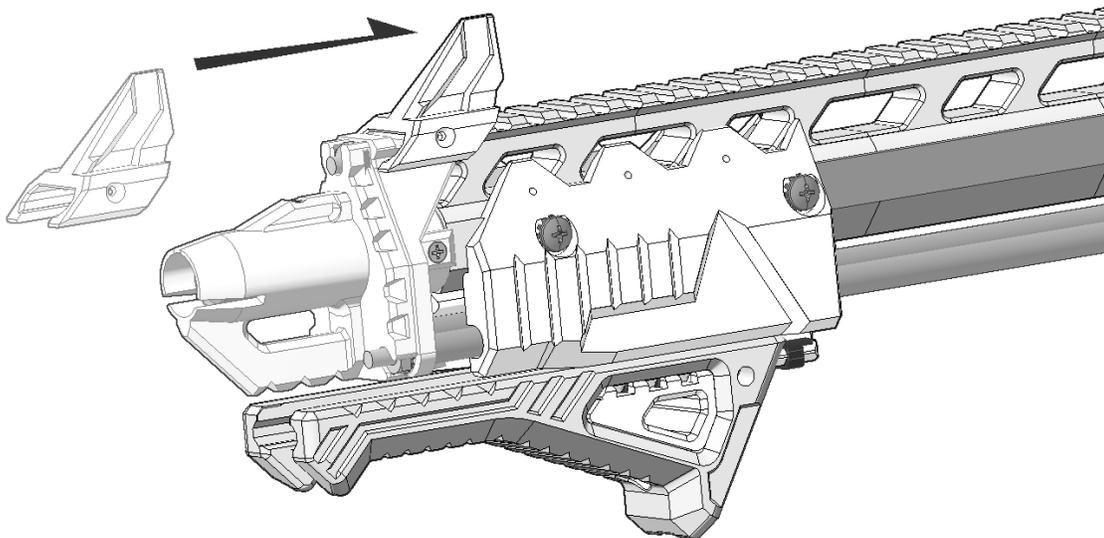
If you printed the Angled Foregrip yourself there are likely to be some spots inside the cutout that need to be touched up with a round needle file. Check the fit of the "Core" piece through it and file out any spots that obstruct it from doing so.

To install the Angled Foregrip slide it onto the lower picatinny rail of the Base Foregrip. You may need to remove the rubber rail cover before doing this if one was included with your blaster.



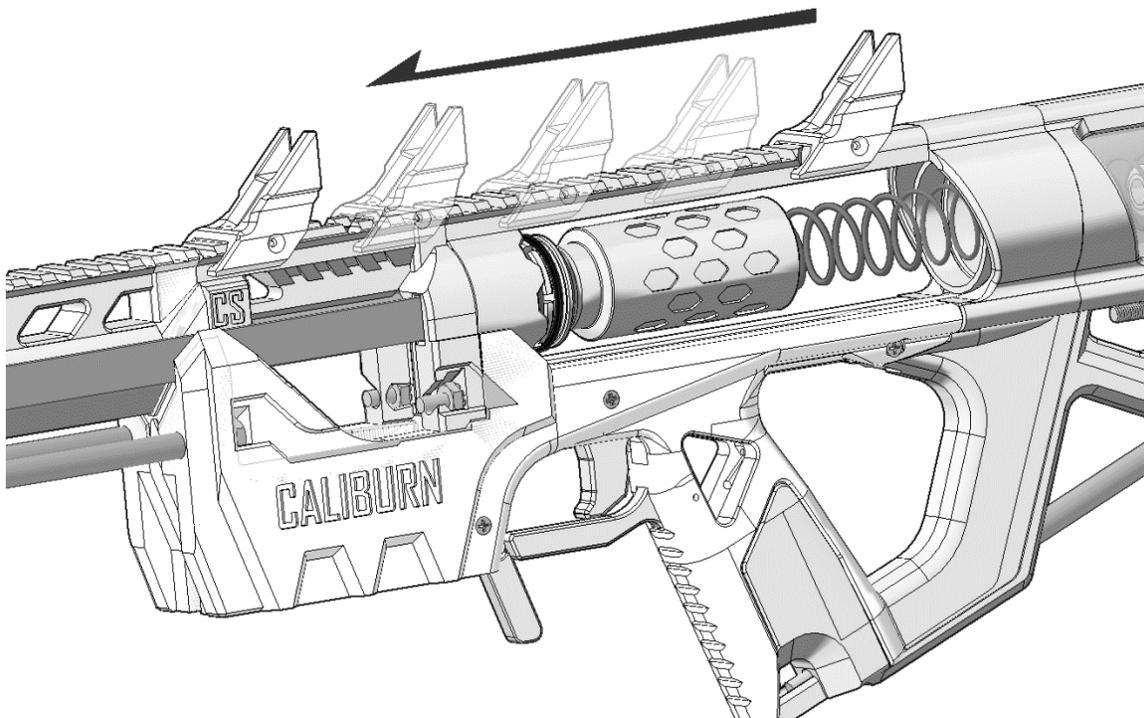
Slide the core piece in through the cutout. You will need to adjust the location of the Angled Foregrip on the rail until the segments on the Core piece line up with them. If needed, use a hammer to tap the core piece into position until it is centered.

If the parts fit loosely together you can optionally drive a 10-32 screw into the hole in the Core piece through the hole in the underside of the Angled Foregrip where indicated.



The “front pip” for the iron sight set slides onto the front of the exposed rail segment on the Muzzle piece. If it will not slide on you may need to touch up the inside of it with a file. It should fit on tightly enough that you can tap it on gently with a hammer.

If it fits too loosely you can drive a 4-40 screw in through the hole in the side of the “front pip”



The process is the same for the “rear pip” from the back of the blaster, but you have plenty or more rail to try to move it over. It’s up to your personal preference as to how far forward you want to move it along the rails.

More accessories to be added in due time.