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.

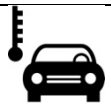
The Following parts however ARE REQUIRED to be printed at 100% infill: Plunger, Sear, and Spreader

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 stock becomes available. I'm producing these myself in what remains of my free time, but the intent is to have at least 2 blasters and 2 hardware kits in stock every week. Custom orders or pre-paid blasters will involve a 1 to 2 week lead time, but that ensures that you won't have to compete for limited inventory. Otherwise just check my eBay store every Weekend for inventory being added.

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

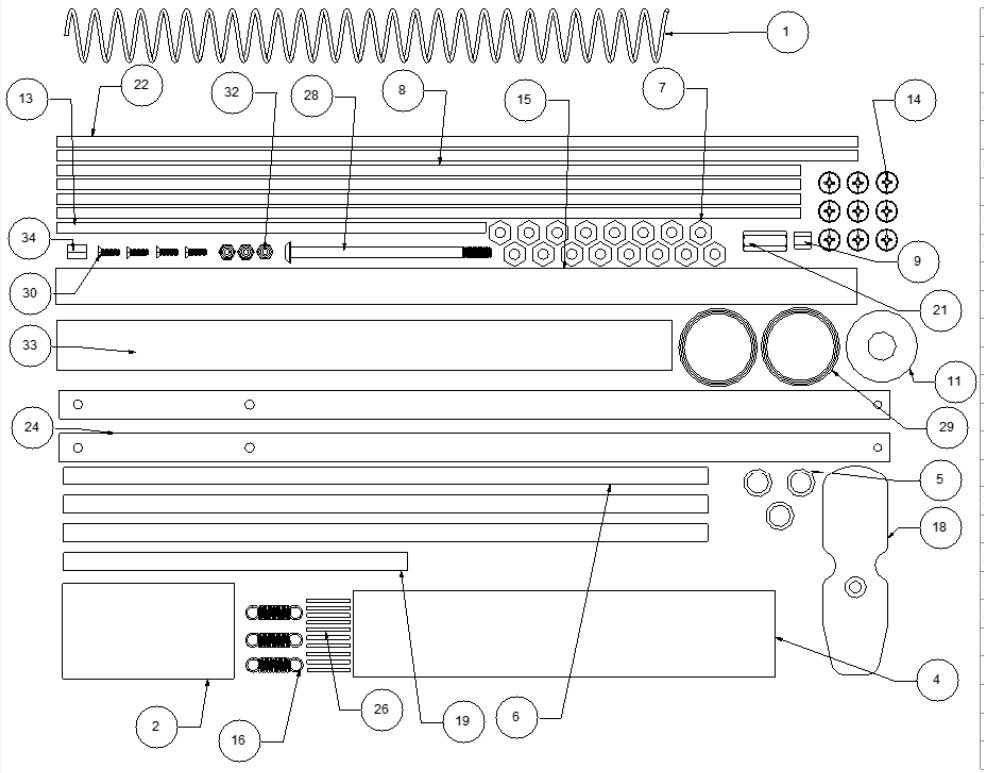
http://nerfhaven.com/forums/topic/27193-caliburn-mag-fed-pump-action-springer/



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.



Item #	Quantity	Part Name
1	1	K25 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
9	1	Grip Standoff
11	1	ShockPad
13	1	8" Threaded Rod
14	9	Screws
15	1	Barrel
16	3	Extension Springs
17	1	Buttplate
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	4	4-40 Short Screw
32	3	4-40 Lock Nut
33	1	Barrel Shroud
34	1	4-40 Standoff

CALIBURN HARDWARE KIT

11/21/17

Printed/Cast Parts NOT included.

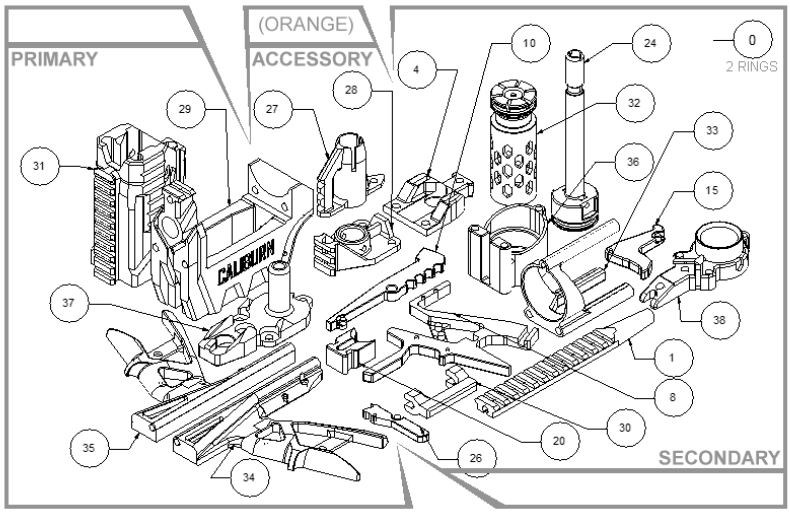
Tools needed: Philips Screwdriver, 3/8 Combination Wrench, 1/16" Allen Key, Needle-Nose Pliers

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 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.

CALIBURN PRINTED PART SET

11/21/17

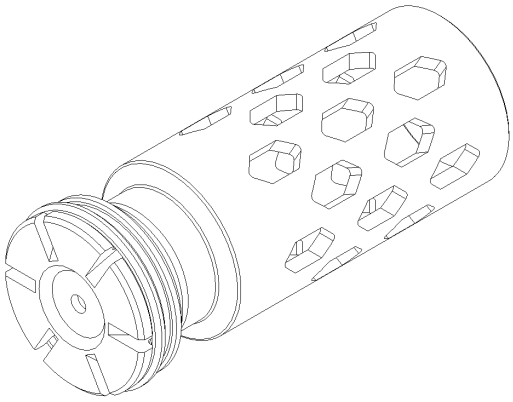


Item #	Quantity	Part Name	Infill %
1	1	rail_top	20
4	1	Spreader	100
8	1	Tguard2	20
10	1	Sear	100
15	1	TriggerAlt	20
20	1	DartGuide	20
24	1	Ram2o	20
26	1	MagRelease2	20
27	1	Muzzle Brake	20
28	1	Muzzle3	20
29	1	MagWell2	20
30	1	Jam2	20
31	1	Rail_Foregrip	20
32	1	Plunger	20
33	1	Ansuzalgiz2	20
34	1	Grip5left	20
35	1	Grip5right	20
36	1	Stock_Alt5	20
37	1	BackButt	20
38	1	FrontButt	20

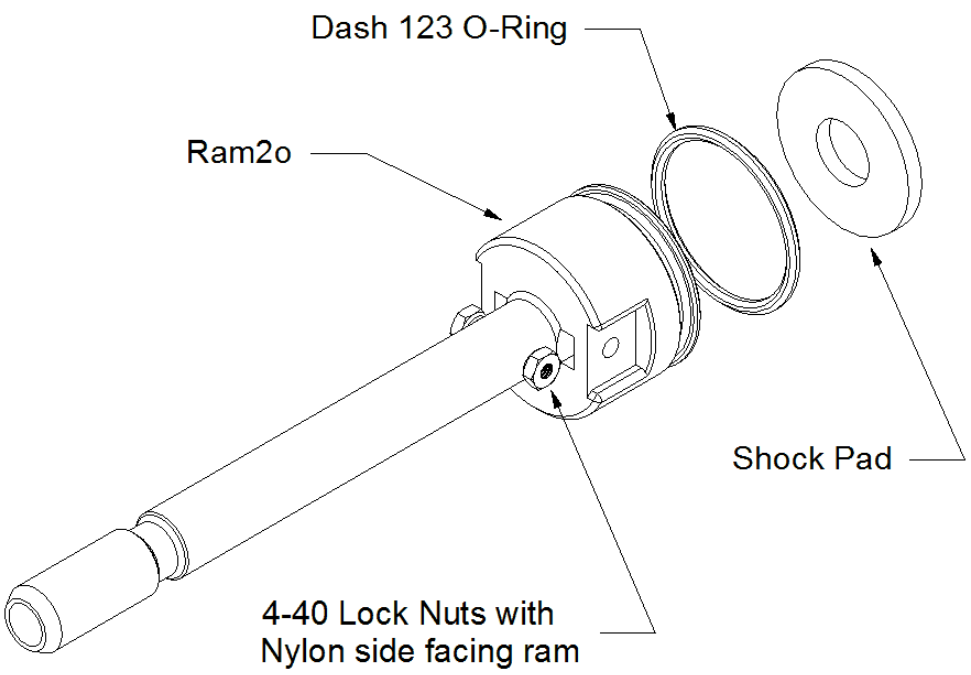
Note: Print layers should not be any larger than 300 microns.
Parts were designed for PLA filament, but can be printed
using ABS without issue. No support material is needed.
Most of the parts should print to tolerance on their hole diameters,
but results may vary so expect to have to touch up some of them
with a round needle file or a drill bit OR scale the parts up by 1% to 2%.
Similarly the inside of the magwell
often times requires a few passes with a flat file to fit older mags.

- Captain Slug
Assembly Instructions: http://www.captainslug.com/nerf/Caliburn3DPAssembly3.pdf

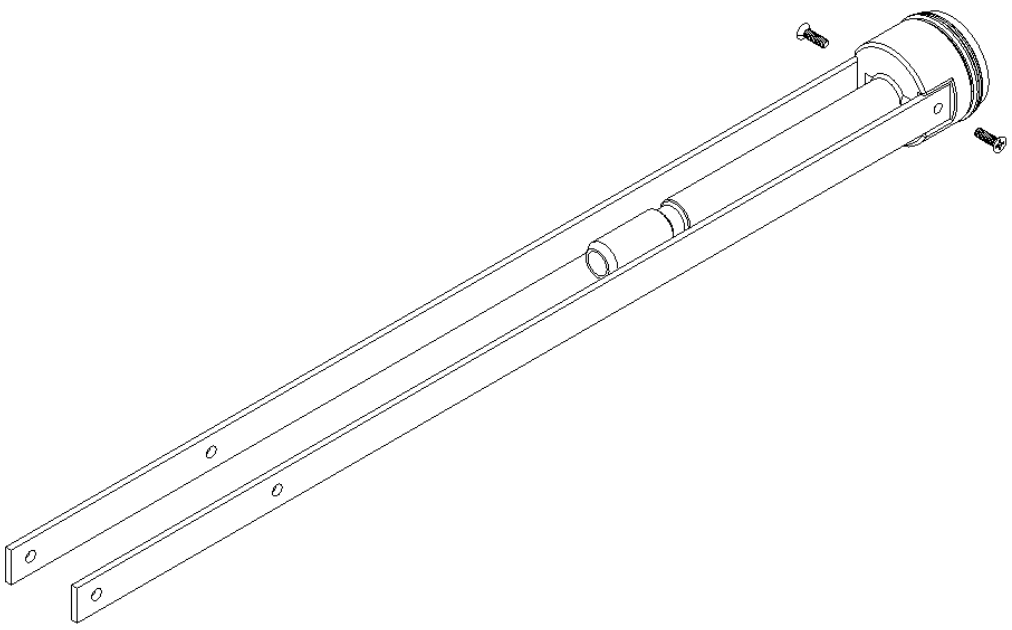
Above is a list of every printed part needed to assemble this blaster. The majority of the through holes should print to the required tolerance, but you will likely have one or two that may require minimal filing. Also make sure to trim off any burrs or oversized edges.



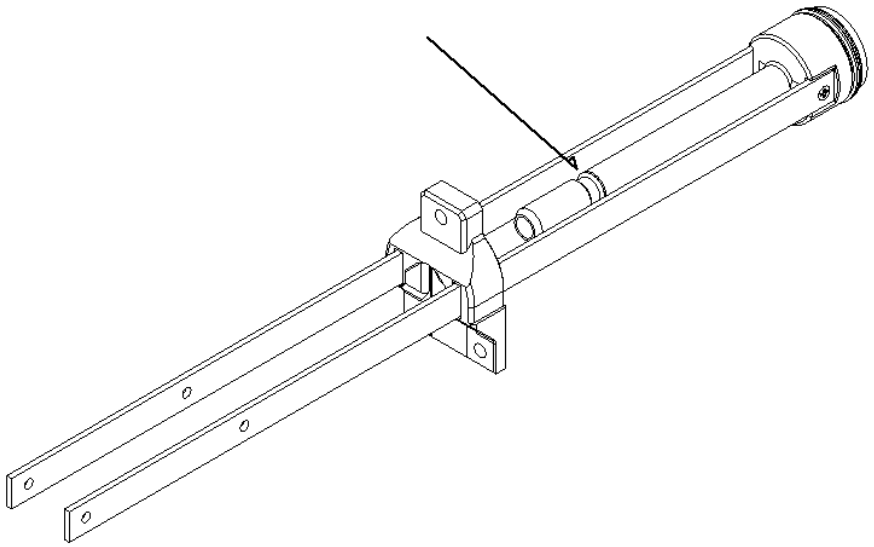
Add a Dash 123 O-Ring to the groove of the Plunger then set aside.



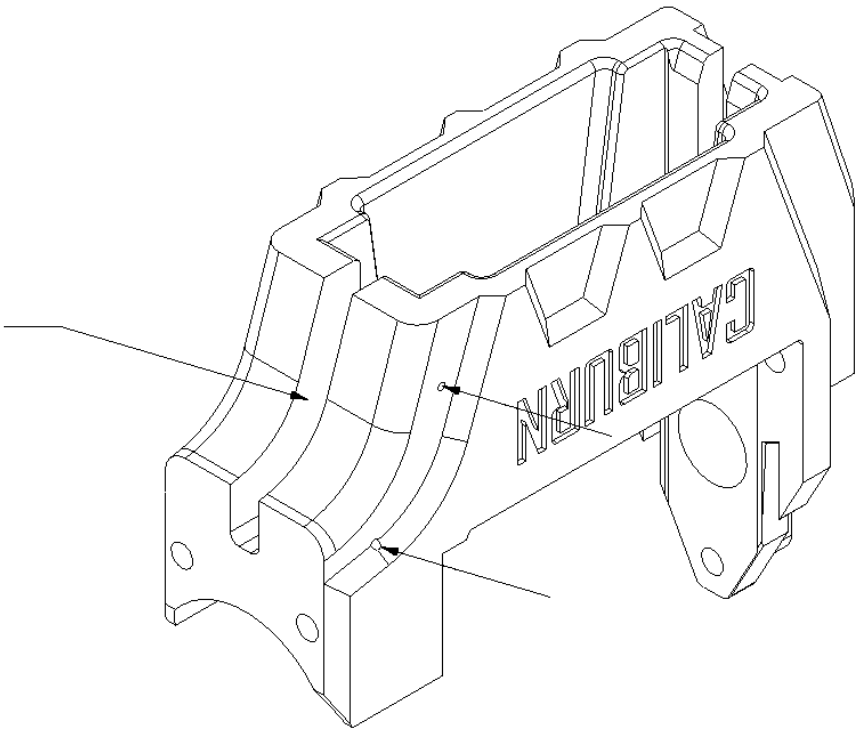
Adhered the Shock Pad centered onto the back of the Ram. Add a Dash 123 O-Ring to the groove on the Ram. Slide two 4-40 Lock Nuts into the slots in the front of the Ram so that their Nylon side is facing the center of the Ram.



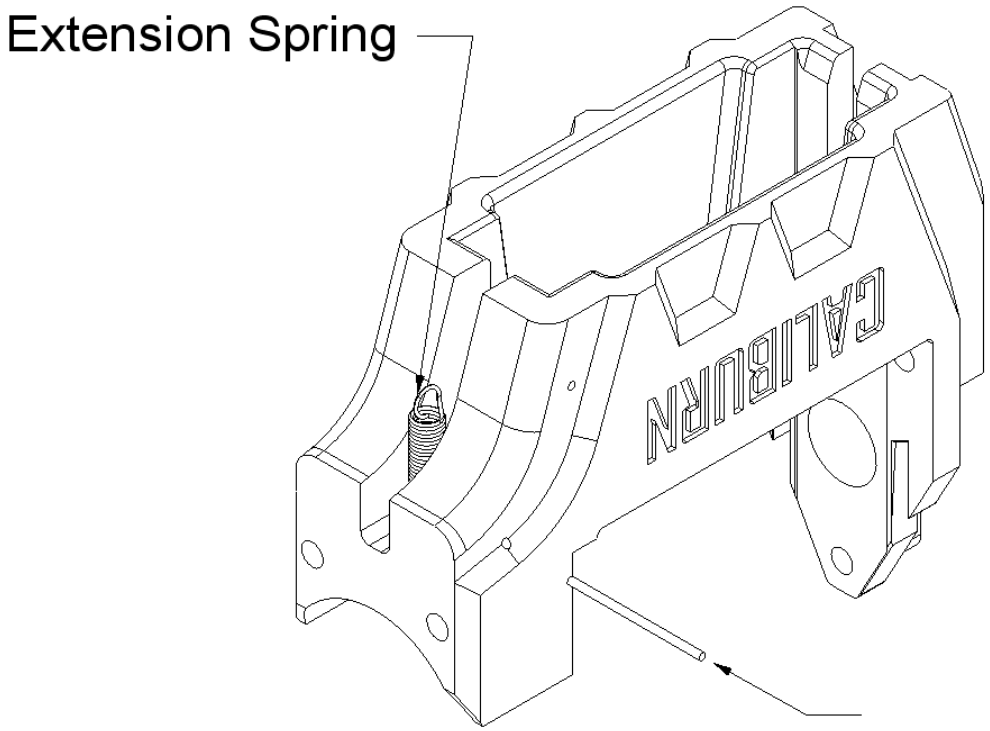
Add two Bolt Arms to the Ram Assembly and secure them with two short 4-40 screws.



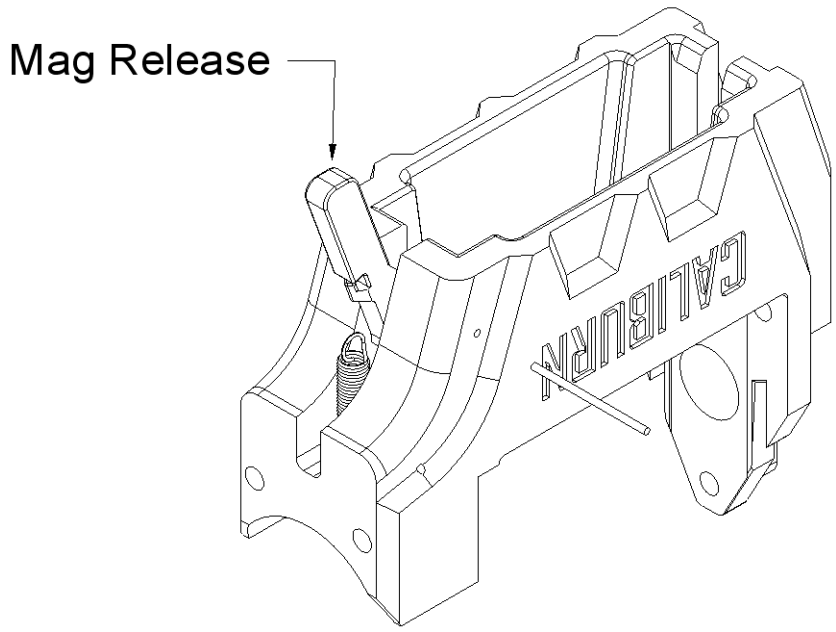
Slide a Spreader over the pair of Bolt Arms. Add an 012 O-ring to the undercut in the Ram. Set this assembly aside temporarily.



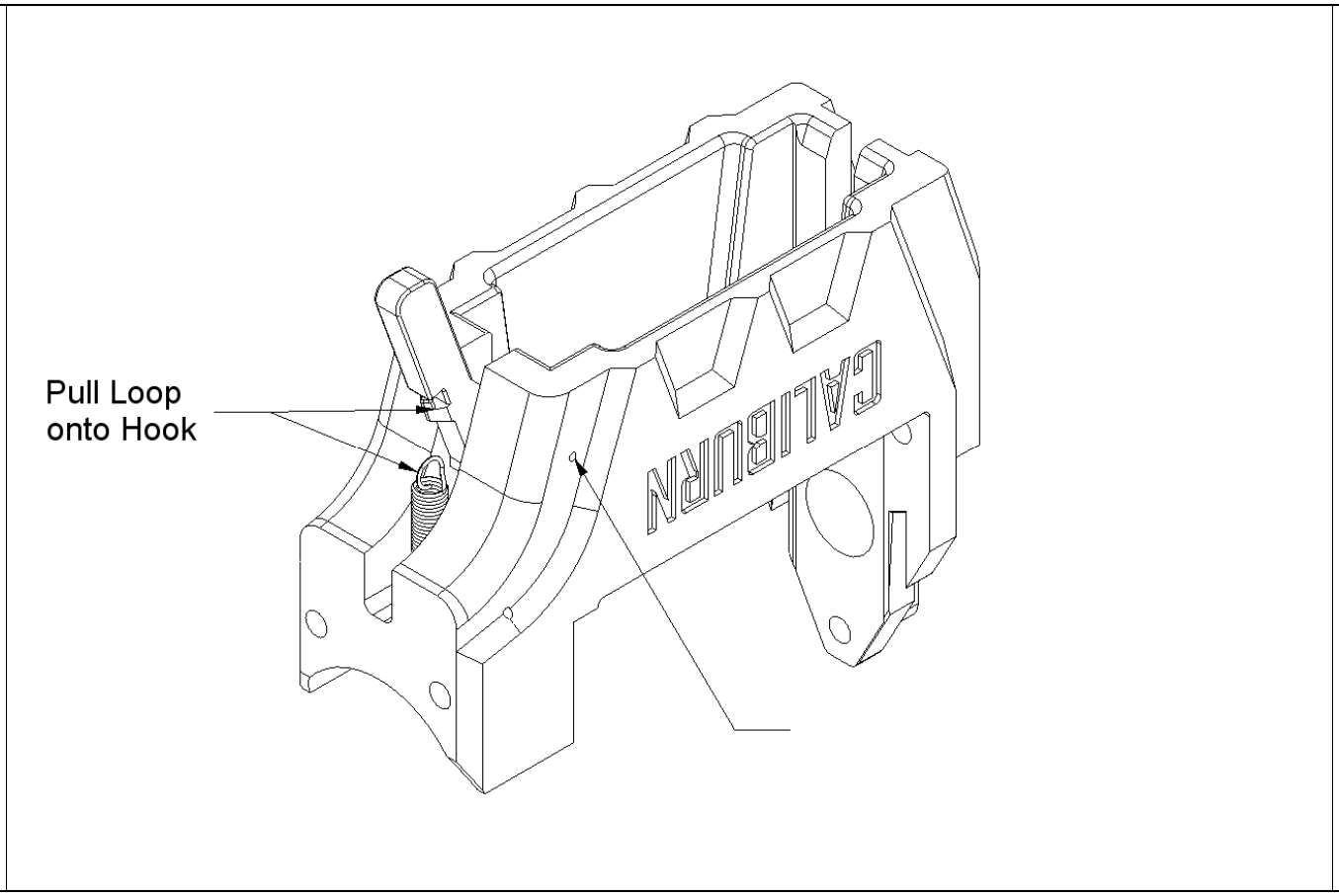
Use a Rectangular File or Knife to remove any scragglies or hair from the inside of the Magwell where indicated.



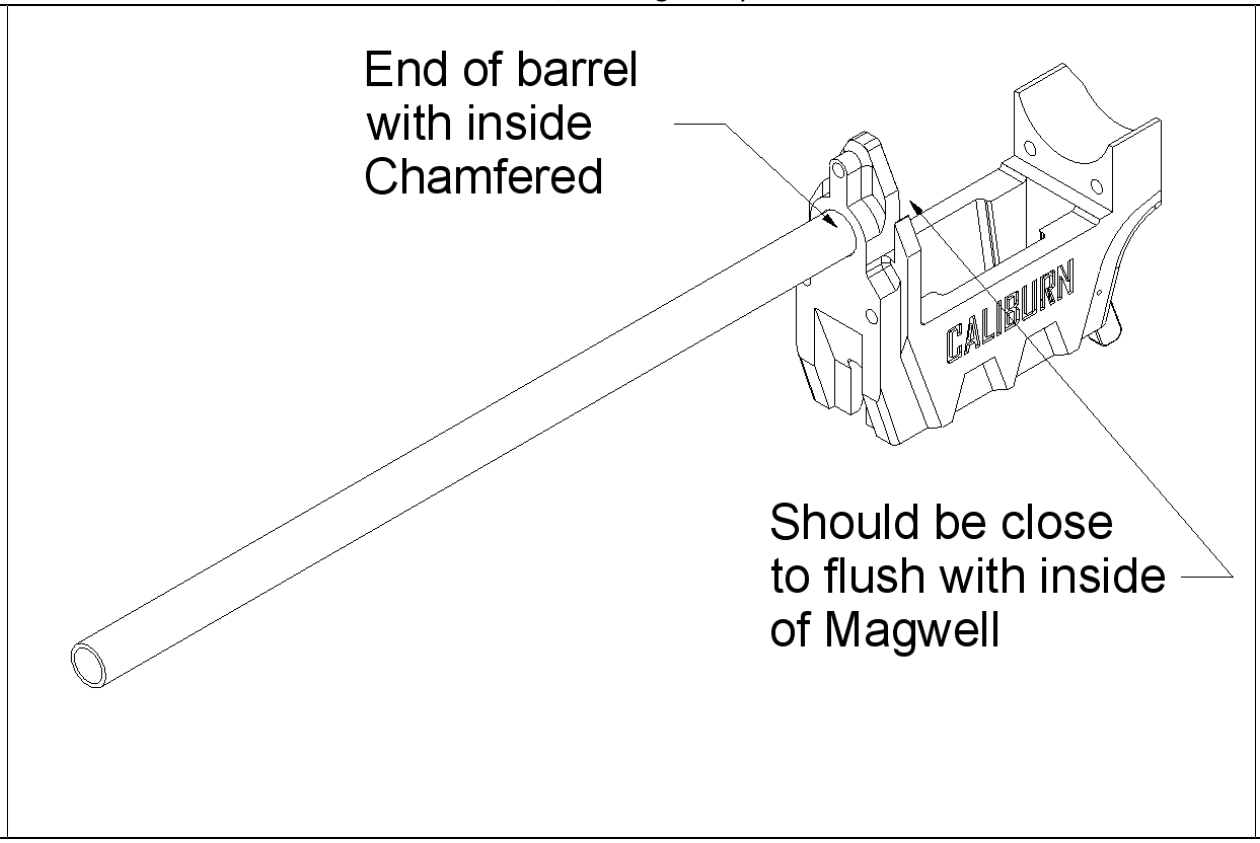
If your Magwell includes it, put one loop of an Extension Spring onto the hook inside the back of it. Otherwise, insert a Pin through the MagWell and through the loop of an Extension Spring. You may need to use a pair of needle-nose pliers to get the pin centered. Once it is centered you can push or pry it towards the bottom of the magwell.



Insert a Short Pin through the MagWell and the Mag Release.

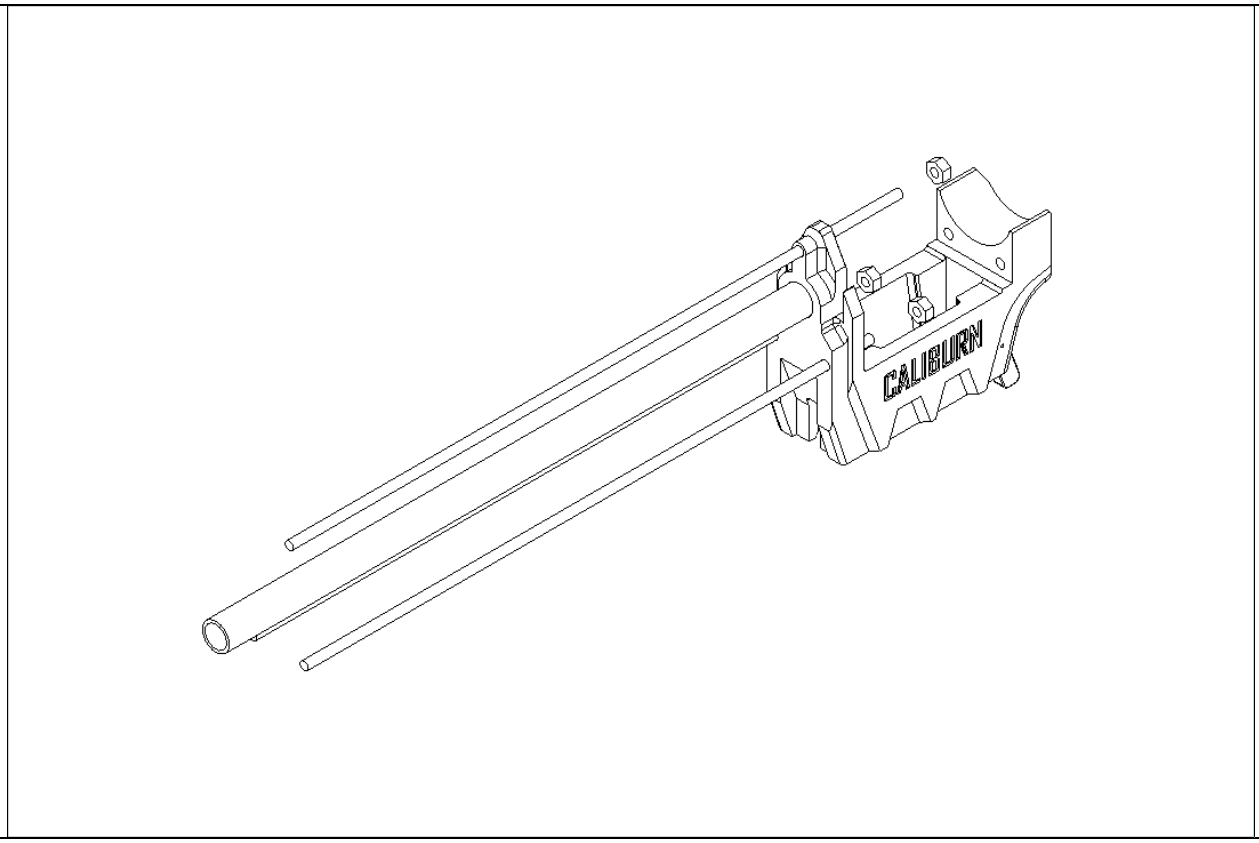


Pull the remaining loop of the Extension Spring onto the hook\peg on the Mag Release. Apply Super Glue to the indicated hole in left left side of the Mag Well or cut a very short section of Dash 123 O-Ring and plug the hole with it. If used, let the glue dry.

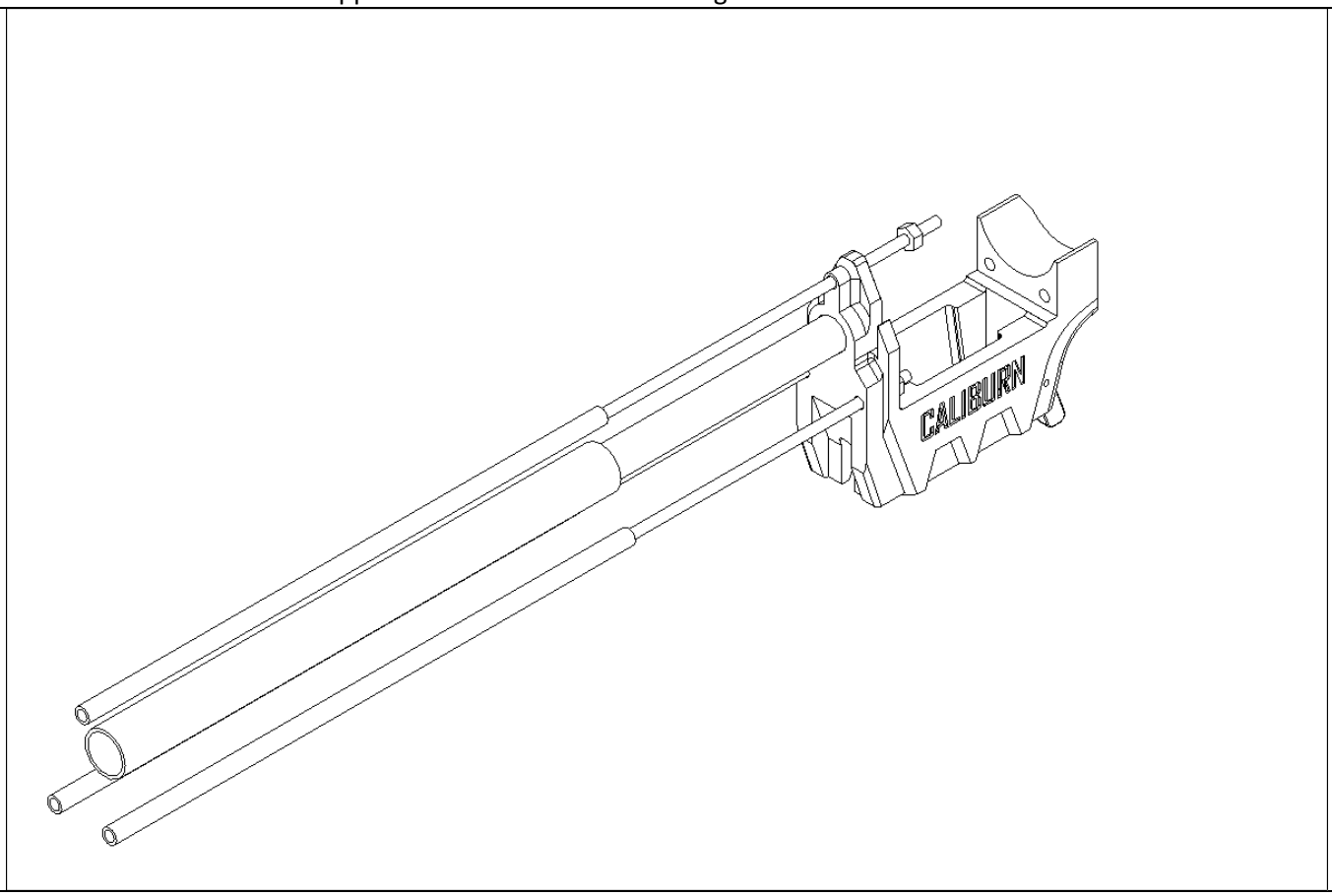


Install the Chamfered side of the Barrel into the Mag Well. You may need to file this hole out with a Round Needle File prior installing the barrel. The inside of the Mag Well can be rested on the edge of a desk or table in order to push the

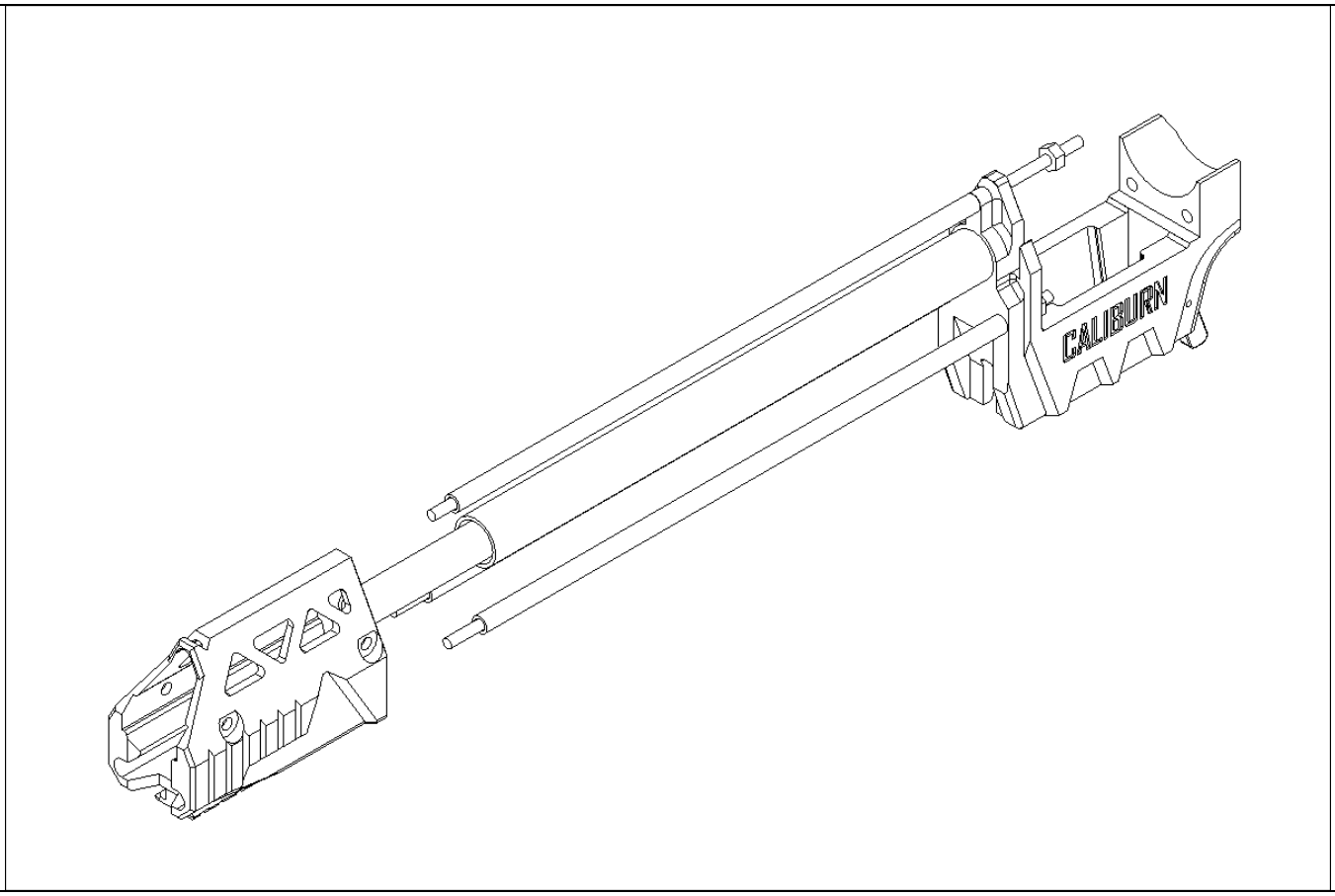
Barrel in.



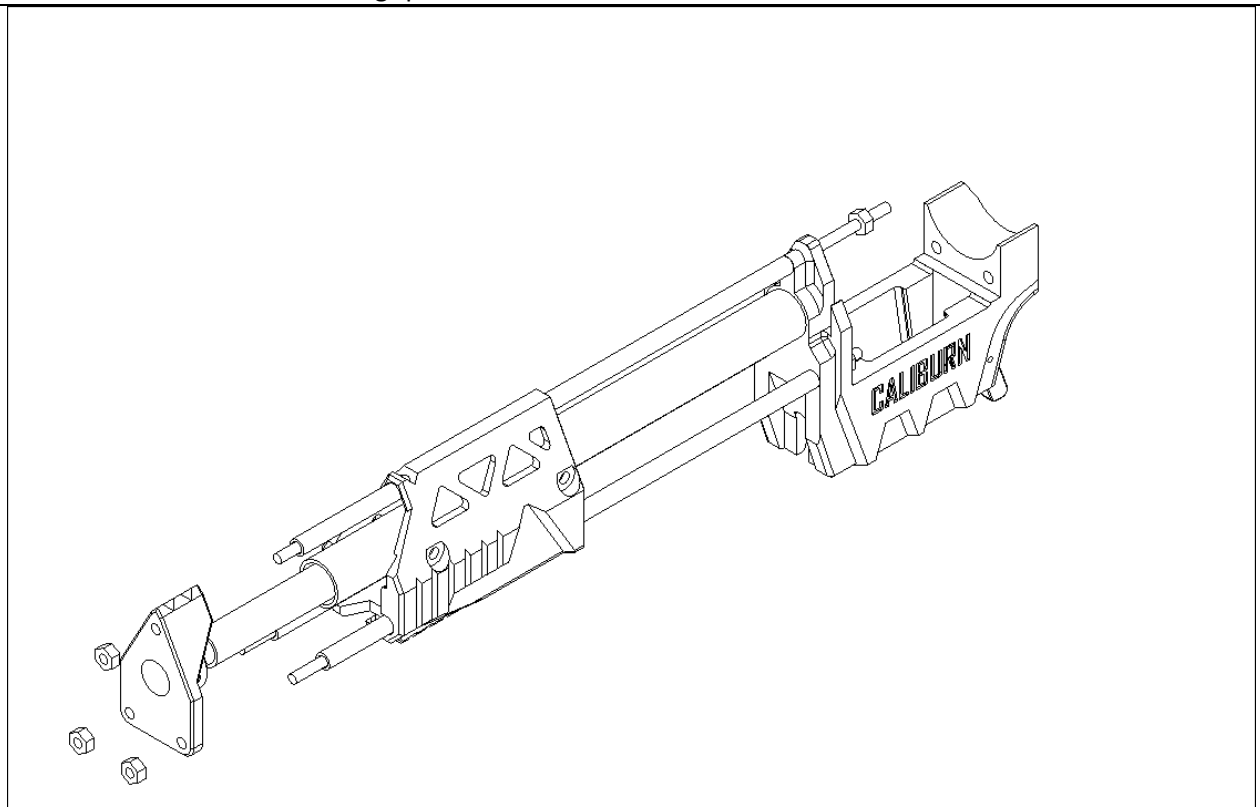
Slide two 13-inch length threaded rods into the lower holes at the front of the Mag Well. Slide one 14-inch length threaded rod into the upper hole at the front of the Mag Well. Add a hex nut to the inside end of each.



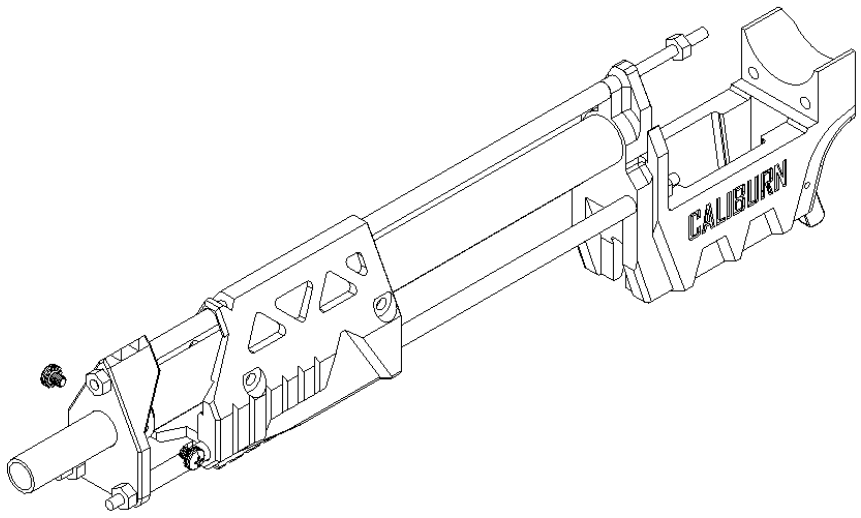
Slide three 11.25 inch length spacers onto the threaded rods. Also slide the Barrel Shroud over the barrel.



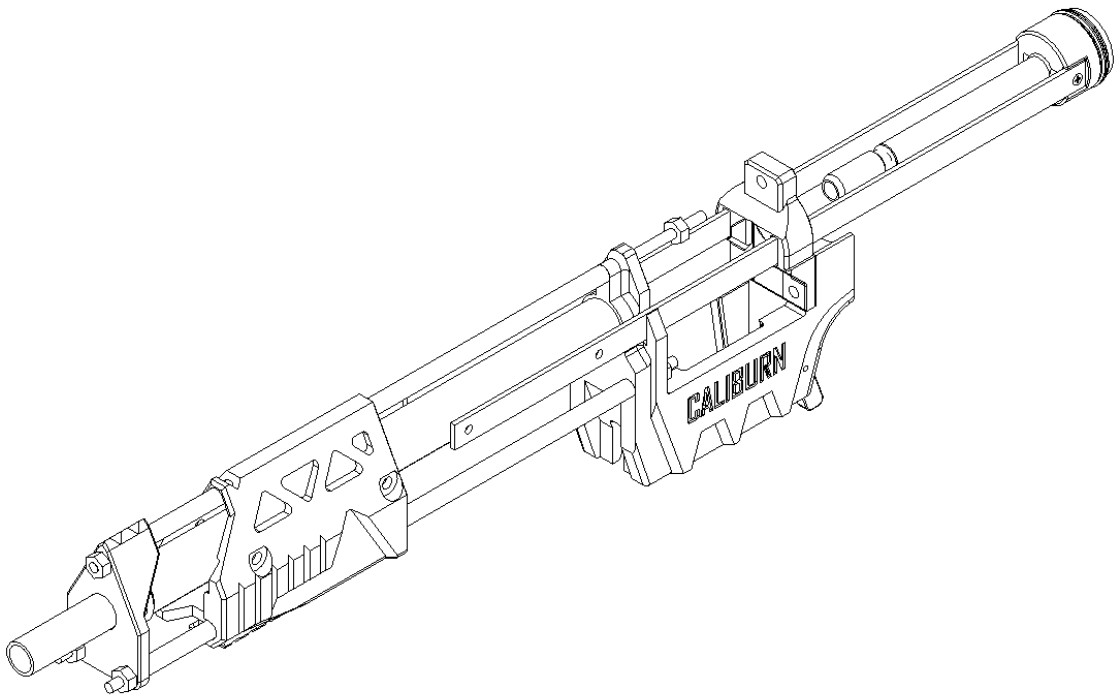
Slide the Foregrip over the now covered threaded rods and the barrel.



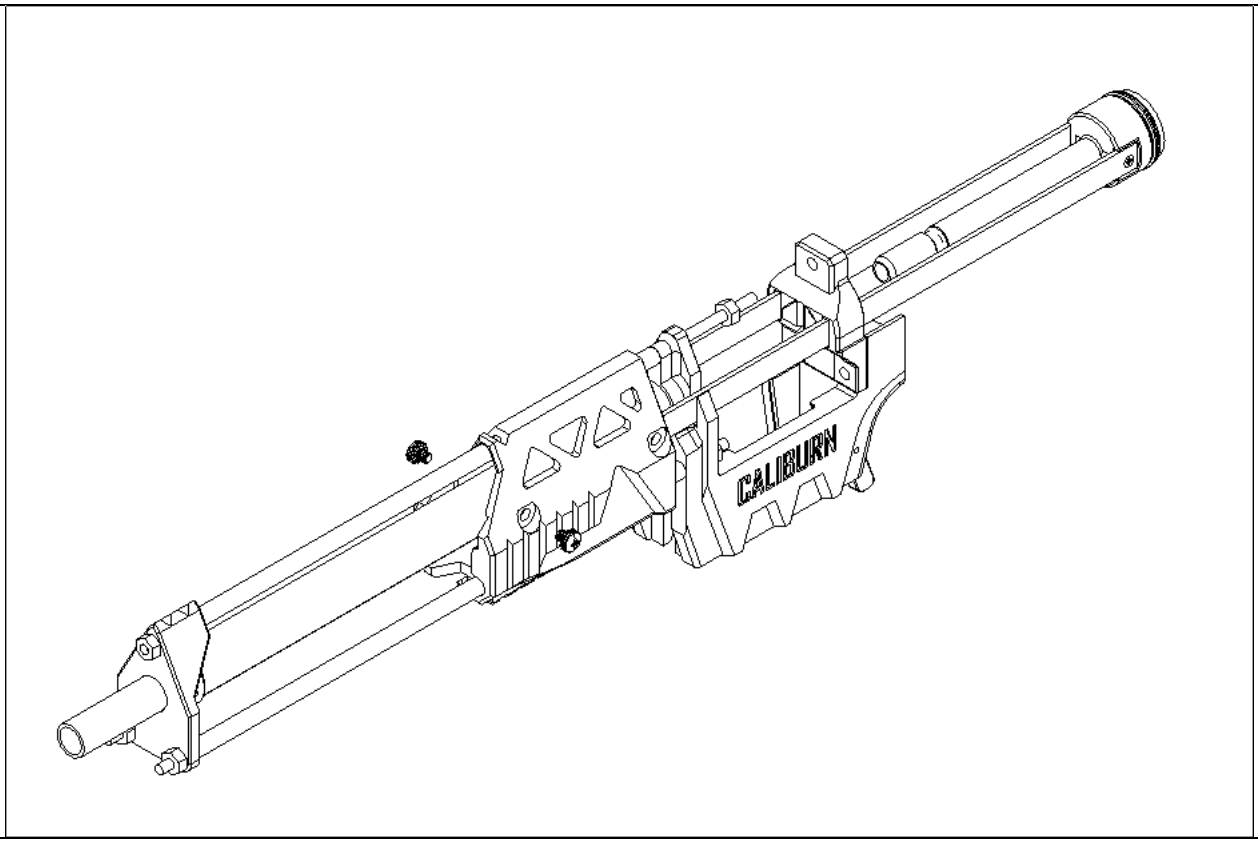
Slide the Muzzle onto the end of the Barrel, then fit the ends of the Threaded Rods through it. **If included, slide the Muzzle Brake piece onto the barrel and upper threaded rod.** Add three Hex Nuts and tighten the lower two.



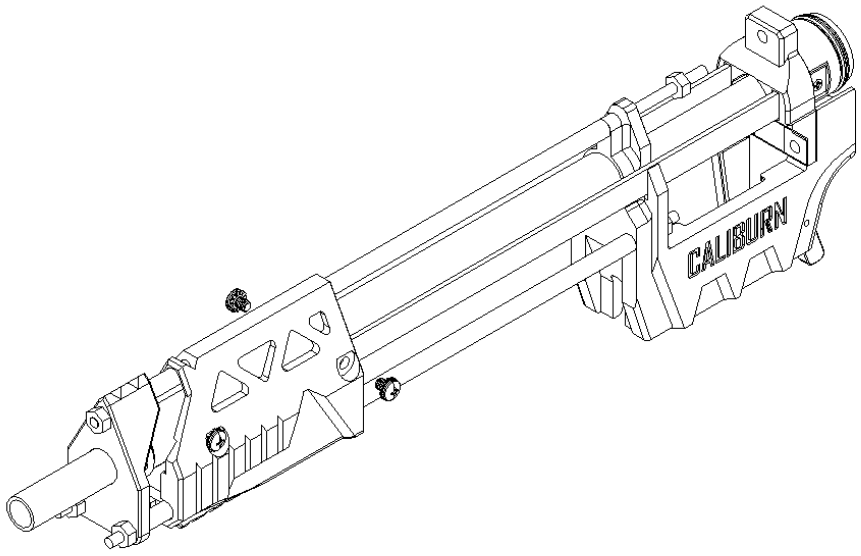
Confirm that the Barrel is still flush with the inside of the Mag Well. The Barrel can be secured using two 1/4" length screws if it has been tapped for them. Otherwise the barrel needs to be glued to the Muzzle using Super Glue or a strong epoxy such as Devon Plastic Weld or Plexus MA310.



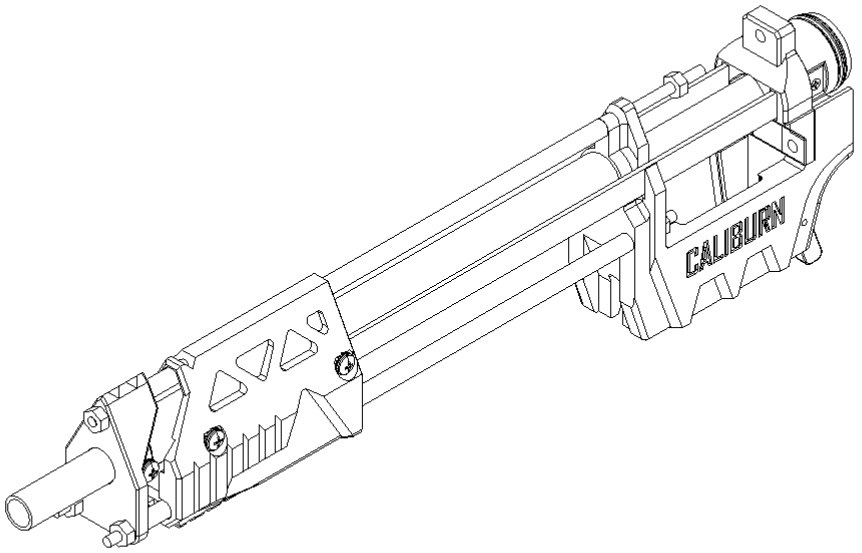
Install the Bolt Assembly by sliding it into the Mag Well from Above. Make sure that the Spreader part is ahead of the lip at the back of the Mag Well.



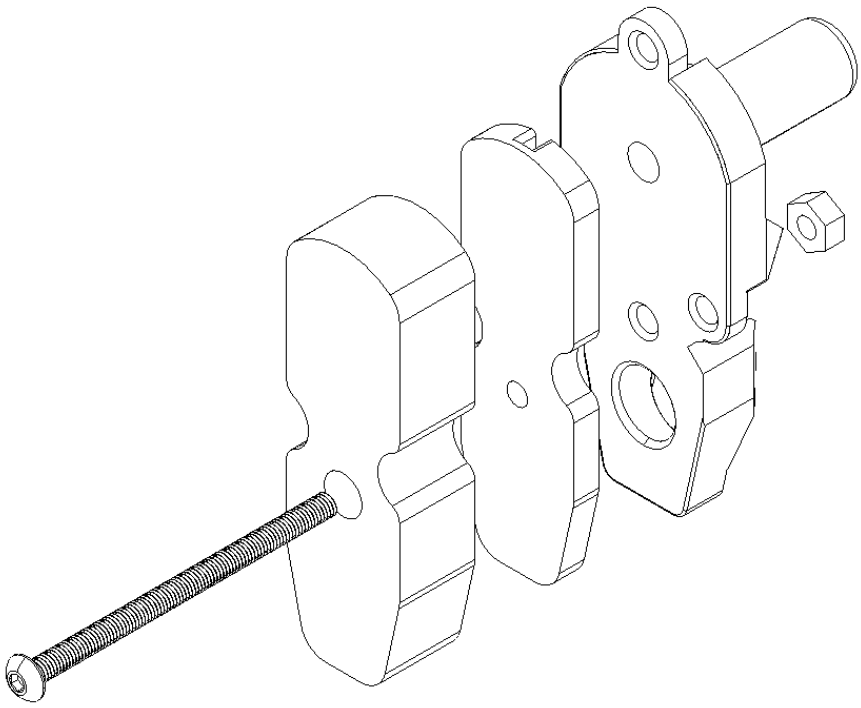
Slide the Foregrip back over the aluminum straps (Bolt Arms) until the threaded holes line up with the holes in the Foregrip. Secure them together at the front pair of holes using two 1/4" length screws. You may need to use a second scredriver or other hand tool to push the aluminum against the inside of the Foregrip so the screw can reach it.



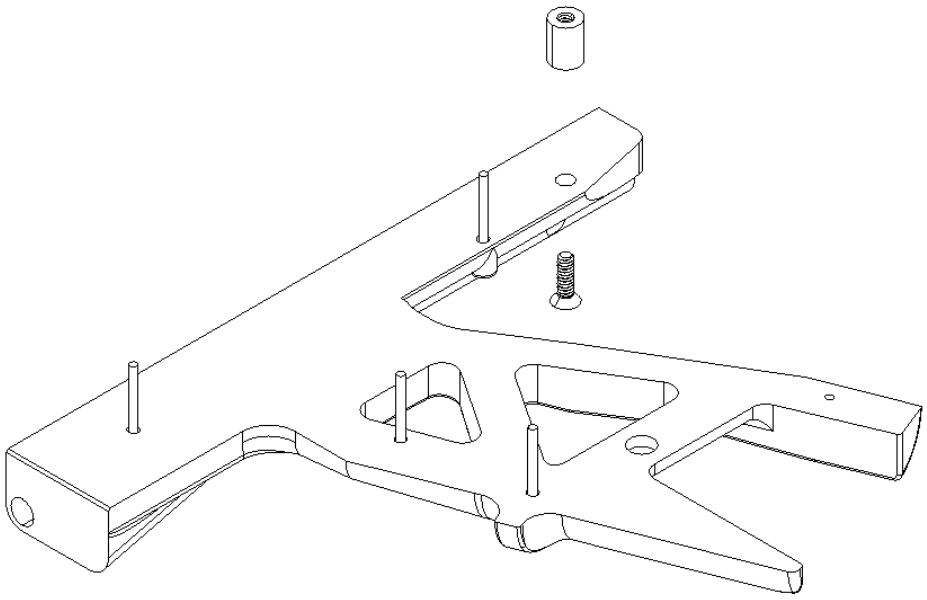
Slide the Foregrip forward. Secure the back half of the Foregrip with two more 1/4" length screws.



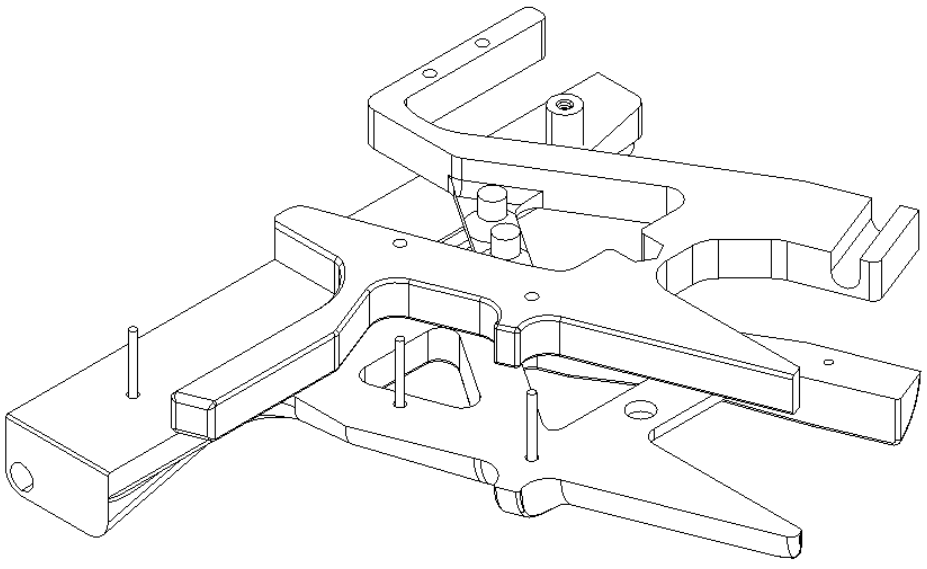
The assembly of the front half of the blaster is now complete.



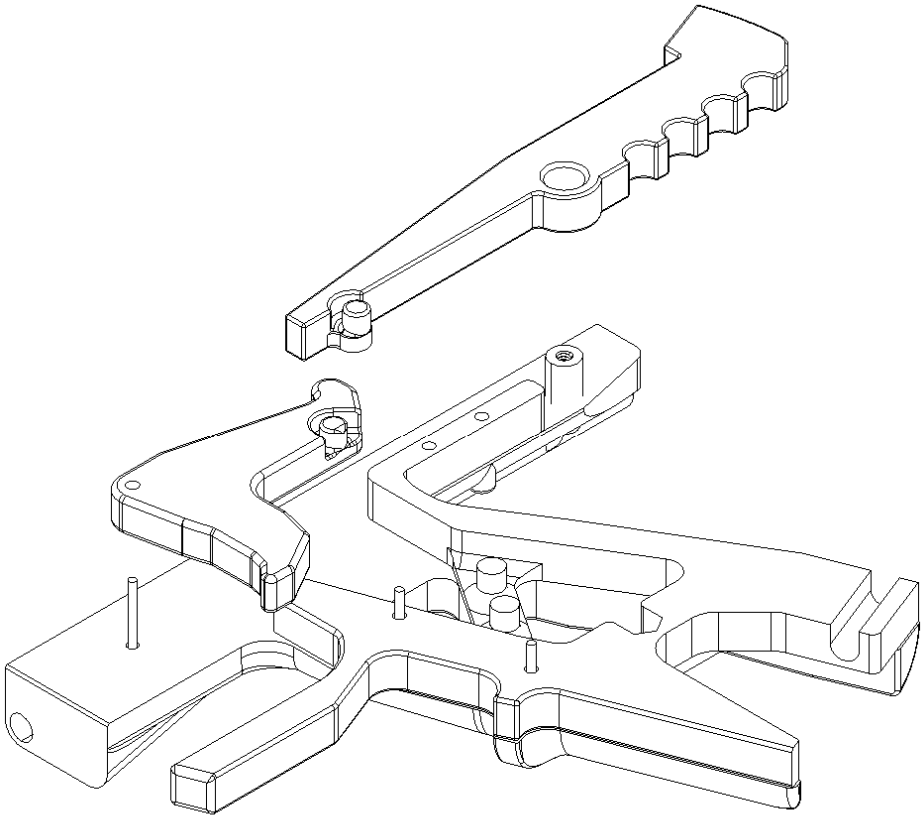
Adhere the Buttplate Foam to the Buttplate. Attach the Buttplate to "Back Butt" using the Long Screw and a Hex Nut. Set aside for later.



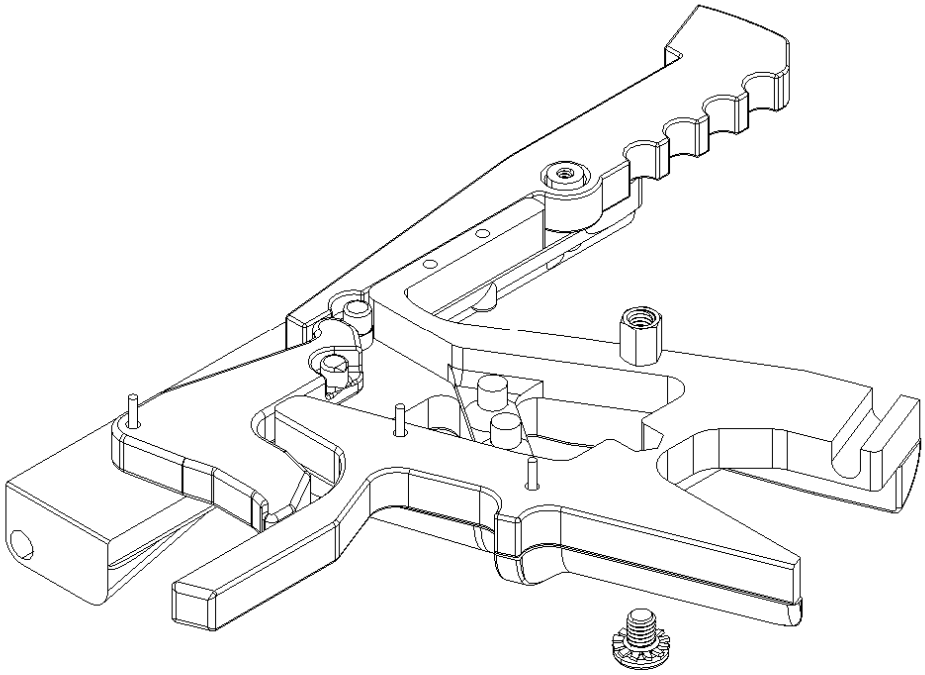
Add Short Pins to most of the small holes as shown. Secure the 1/4" OD standoff to the back of the Grip Half using a 3/8" length 4-40 screw.



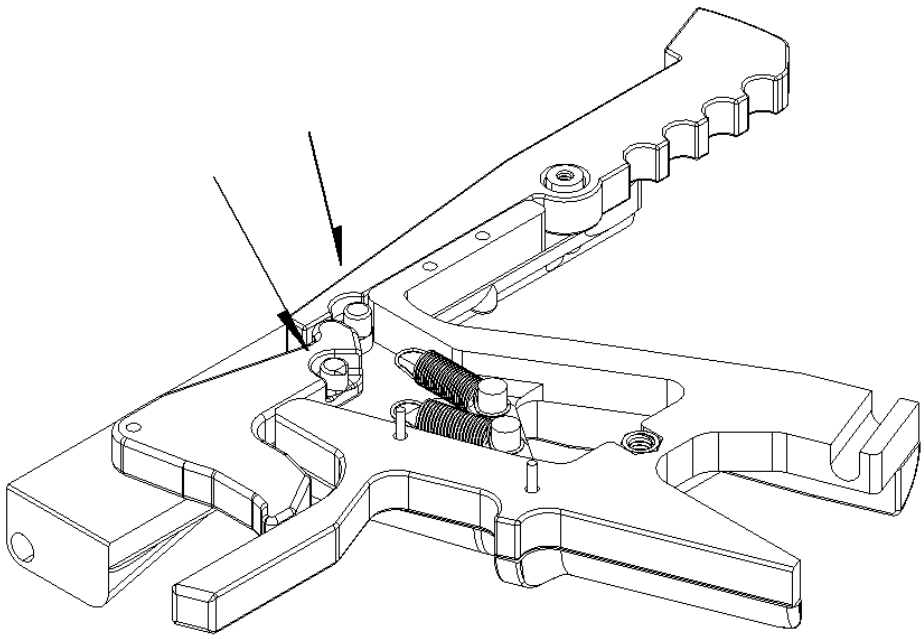
Slide TGuard2 onto the pins.



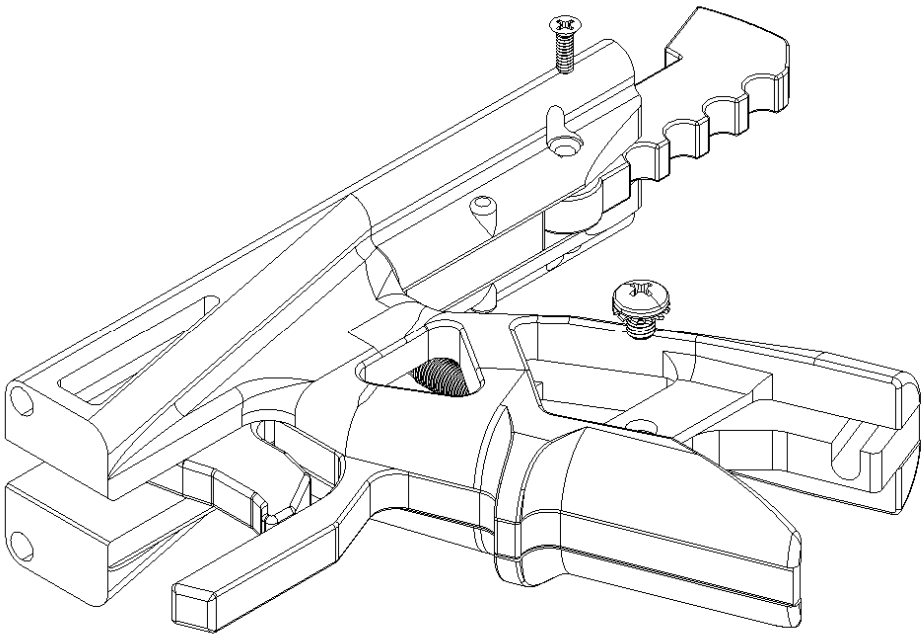
Slide the Trigger onto the foremost short pin. Slide the Sear onto the 1/4" OD standoff.



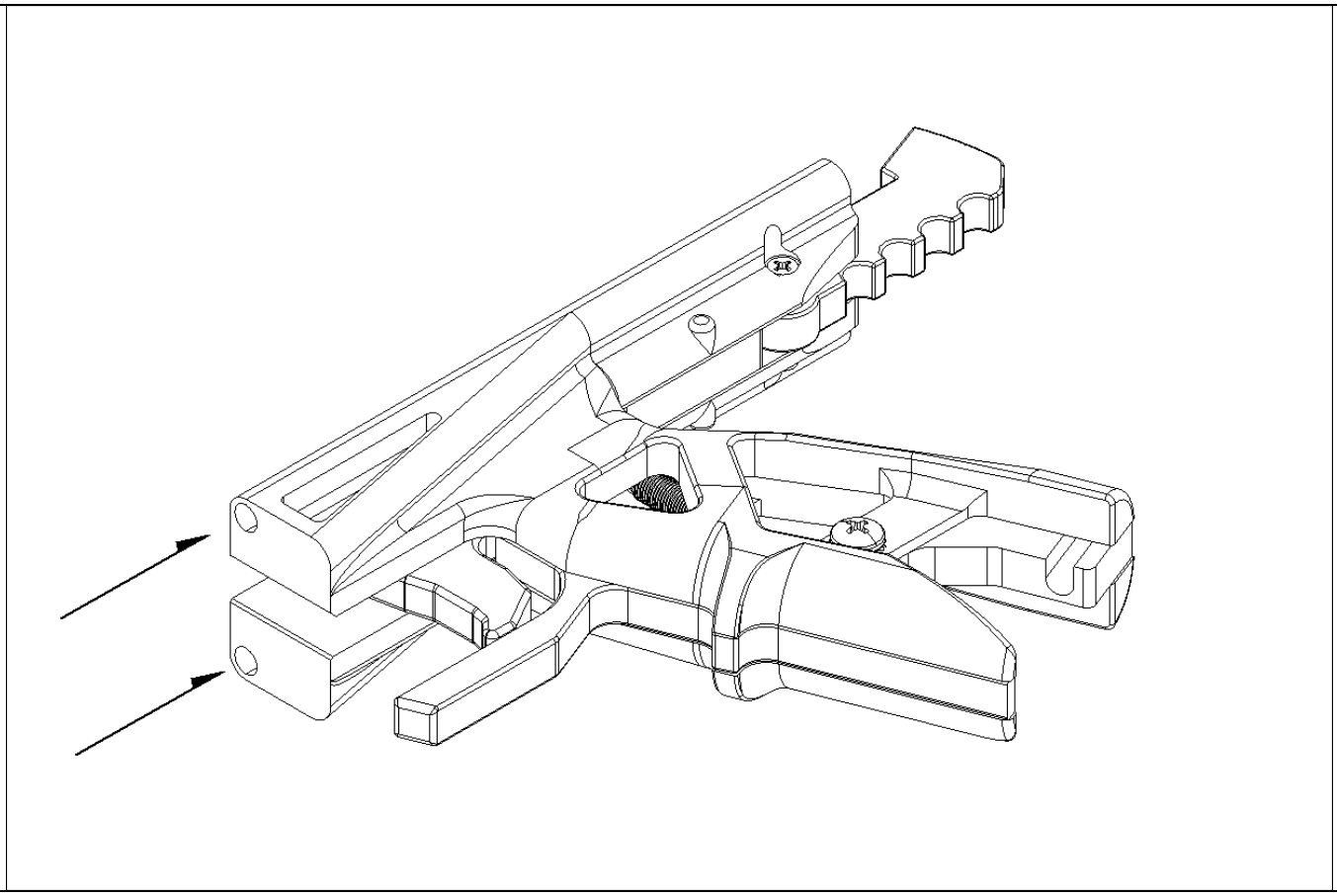
Add the short hex standoff to the cutout in Tguard2 and secure it to the Grip panel with a short 10-32 screws.



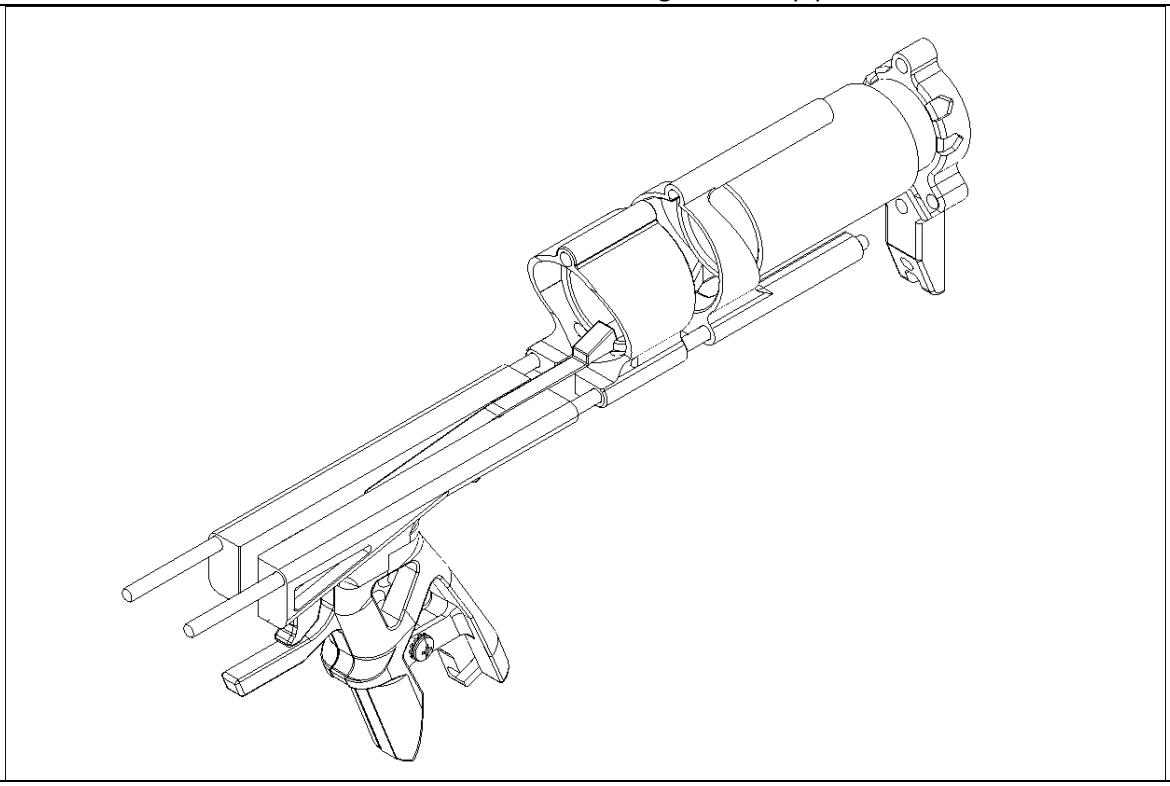
Put the loop of an Extension Springs onto the peg of Tguard2. Pull the opposite loop onto the pegs of the Trigger and Sear using Needle-Nose Pliers, Tweezers, or a Pick.



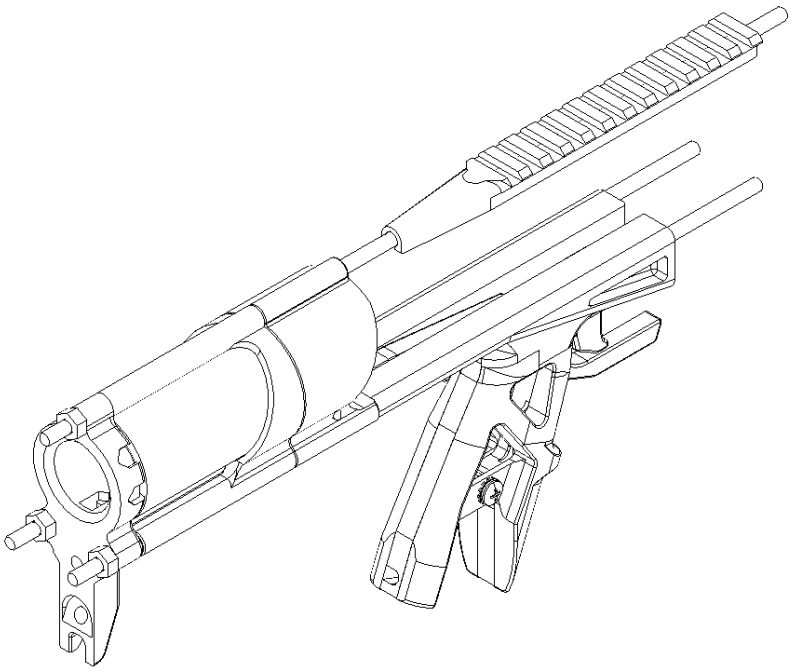
Slide the other Grip panel onto the short pins. Secure it with a Short Screw and a 3/8" length 4-40 screw



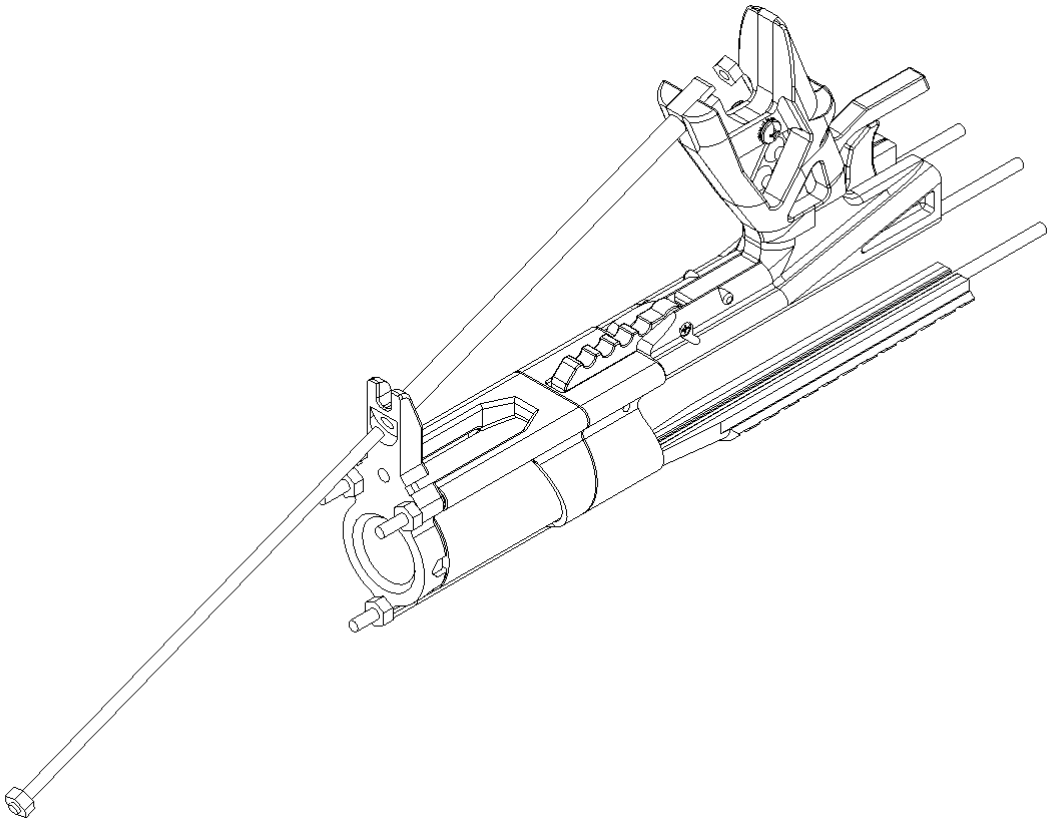
Slide a 13" Threaded Rod through Each Grip panel



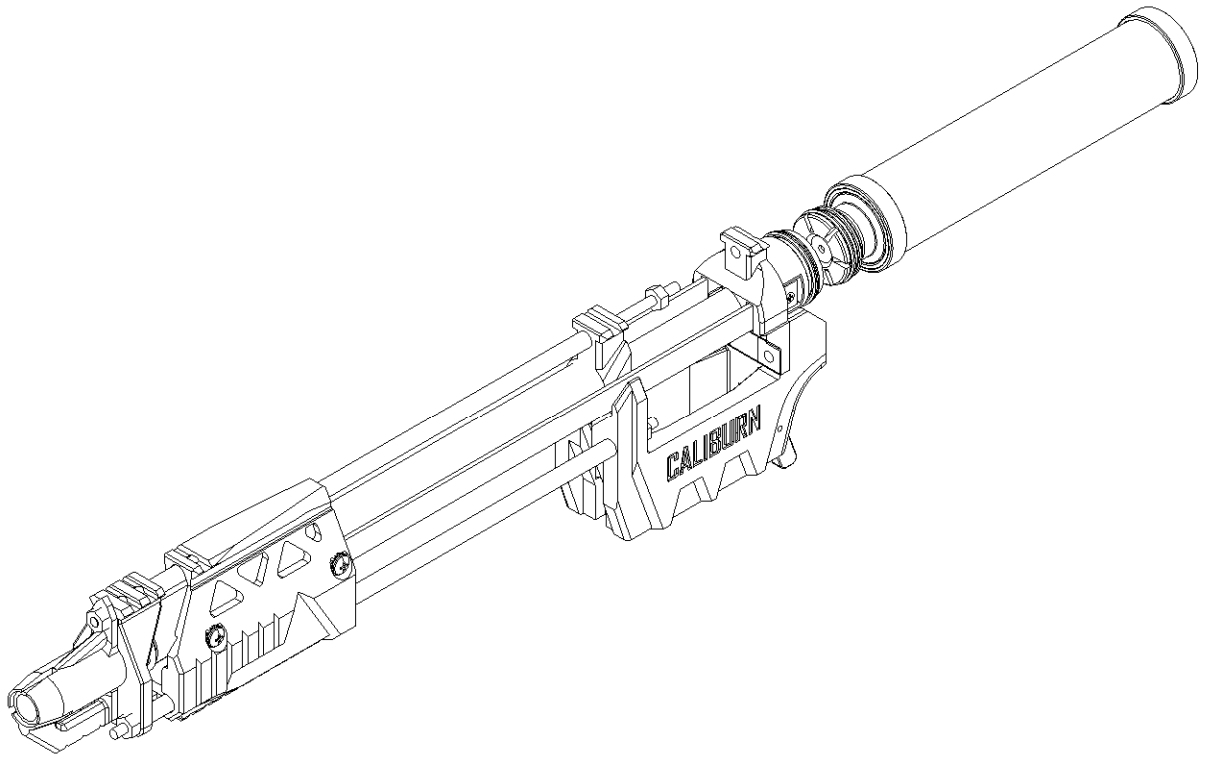
Slide the parts shown onto the 13" Threaded Rods. They include Stock_Alt5, Ansuzalgiz2, Stock Spacer (clear), and "Front Butt".



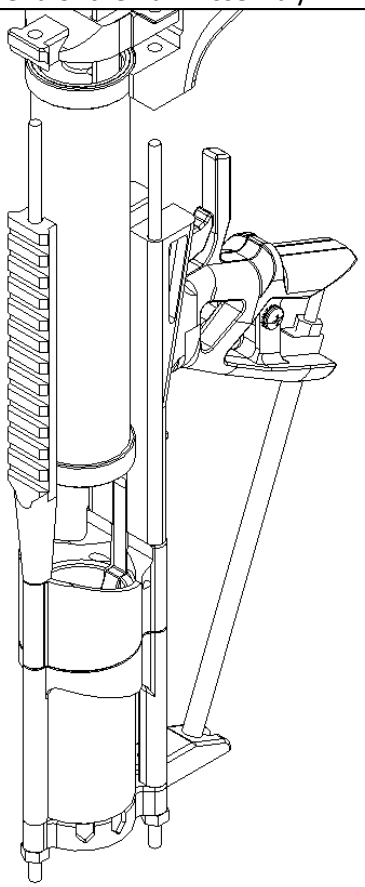
Add a 14" Threaded Rod, Rail Top, and three Hex Nuts. Leave 1/2 to 5/8" of exposed thread out the back of the assembly.



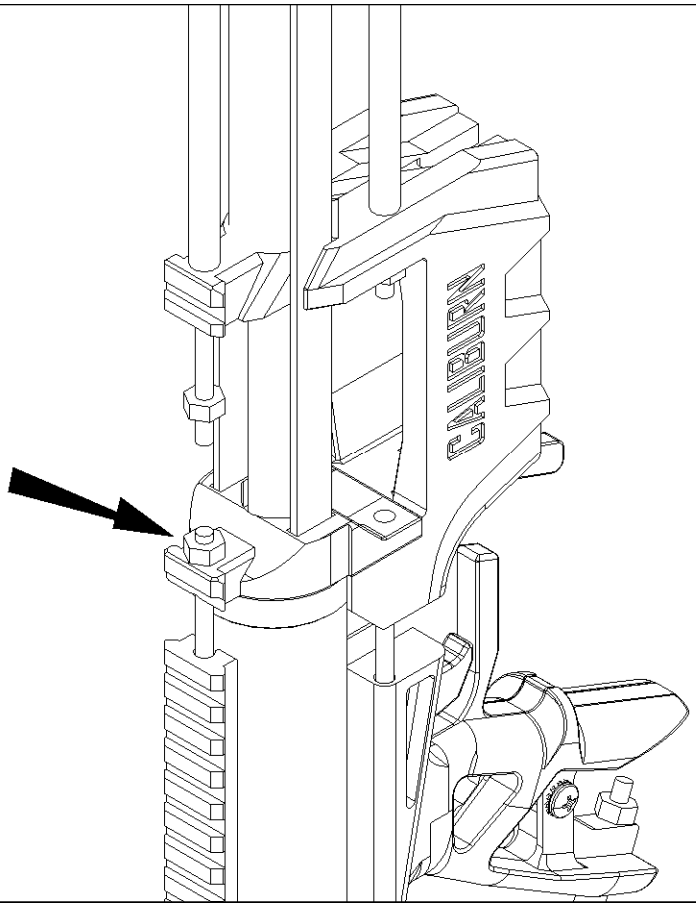
Wedge the 6" spacer inbetween the heel of the Grip and the front angled surface of the "Front Butt". Add a Hex Nut to the very end of the 8" Threaded Rod and then slide it in through the counterbored hole in the "Front Butt". Add a Hex Nut to the opposite end of the 8" Threaded Rod and tighten.



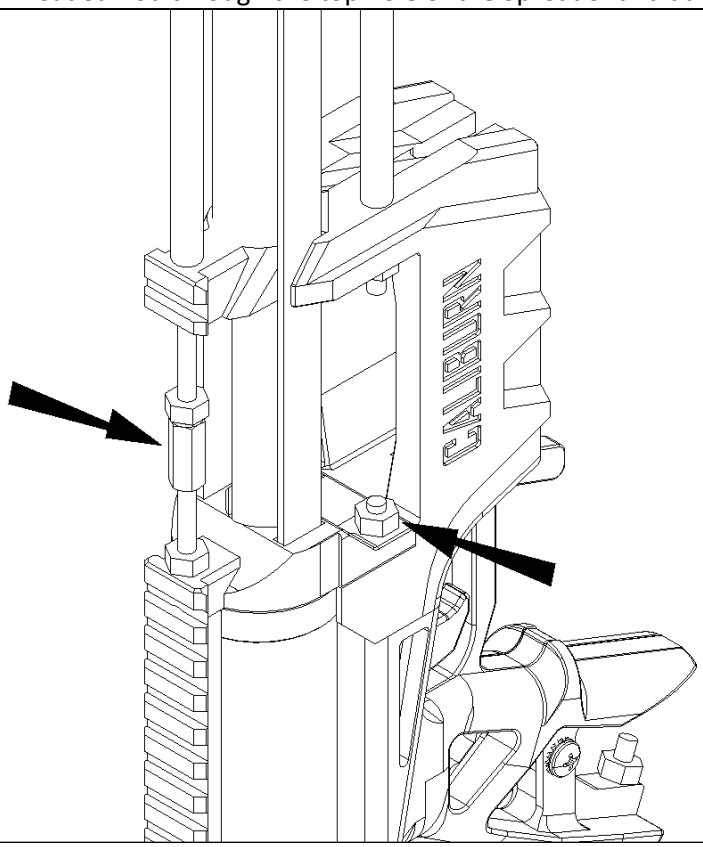
Slide the Plunger backwards into the Lubricated end of the Plunger Tube. Wiggle the Plunger Tube onto the O-Ring at the back end of the Ram Assembly.



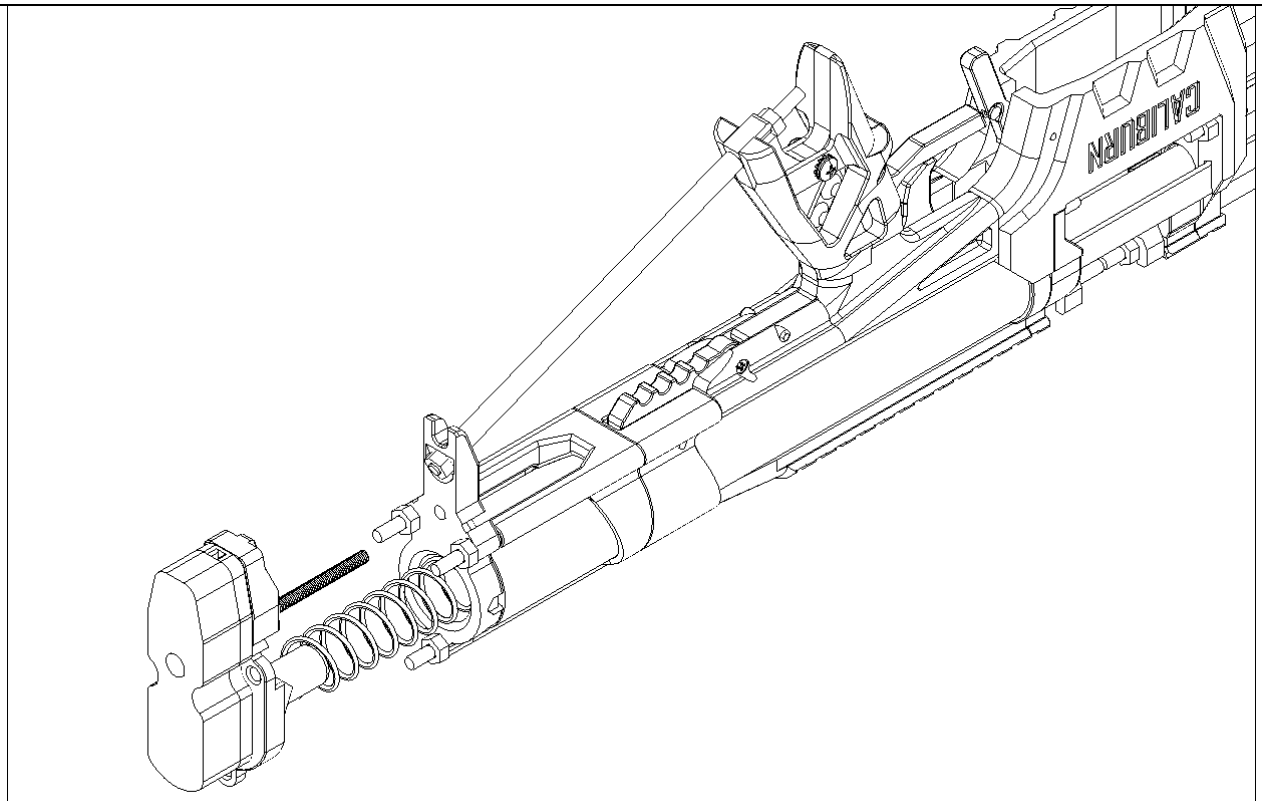
Rest the Stock against a chair or table. Carefully lower the Plunger Tube and Front Assembly into the Stock Assembly.



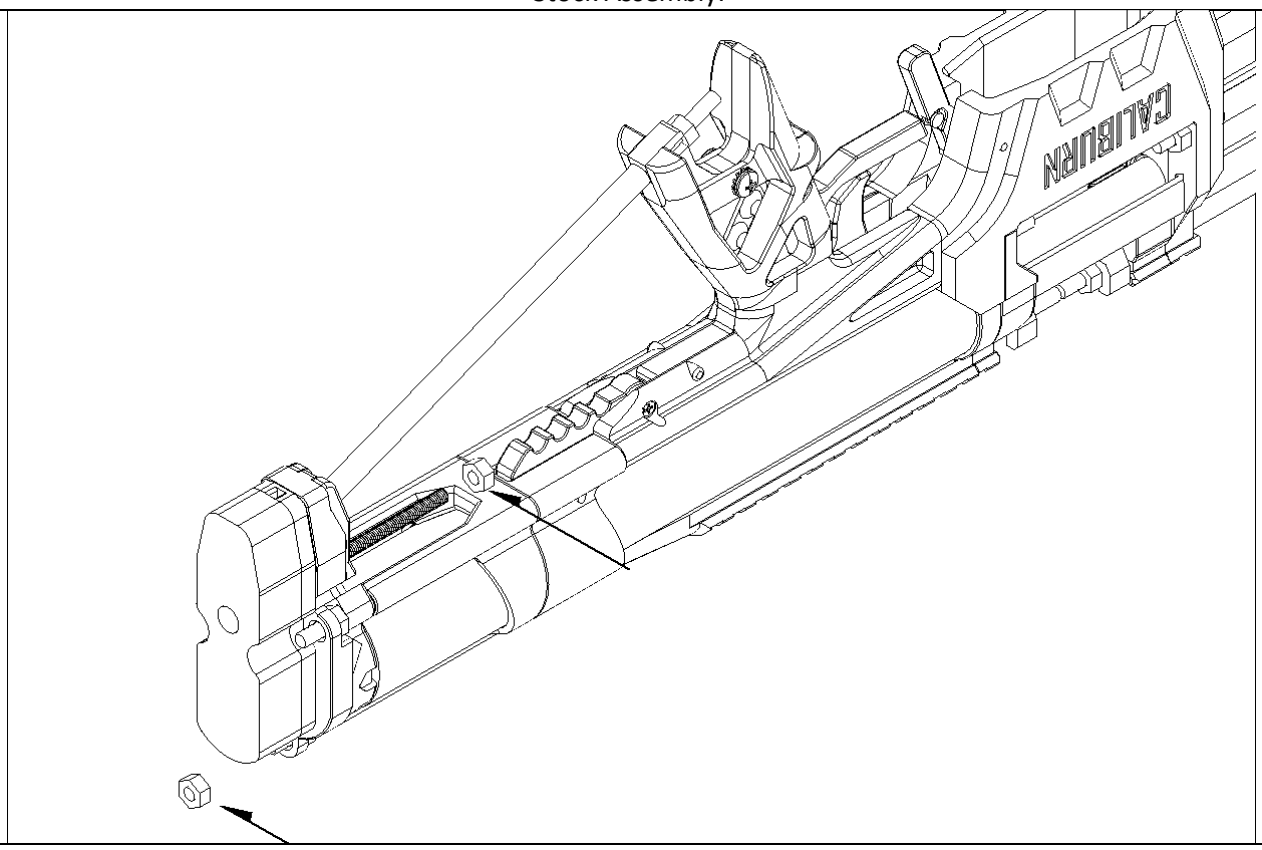
Feed the 14" Threaded Rod through the top hole of the Spreader and add a Hex Nut.



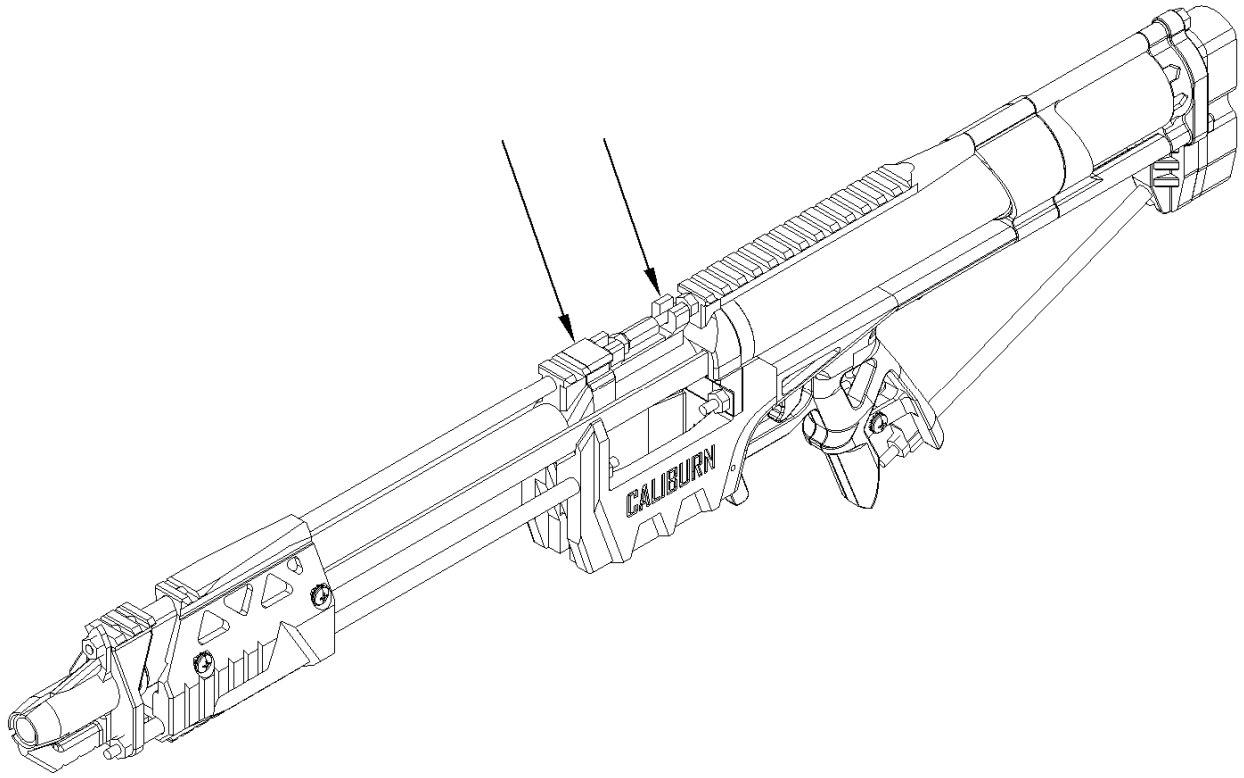
Also add the Coupling Nut to the 14" Threaded Rod, then guide the 13" Threaded Rods through the lower holes in Spreader and add Hex Nuts to those as well. Use the Coupling Nut to connect both 14" Threaded Rods together.



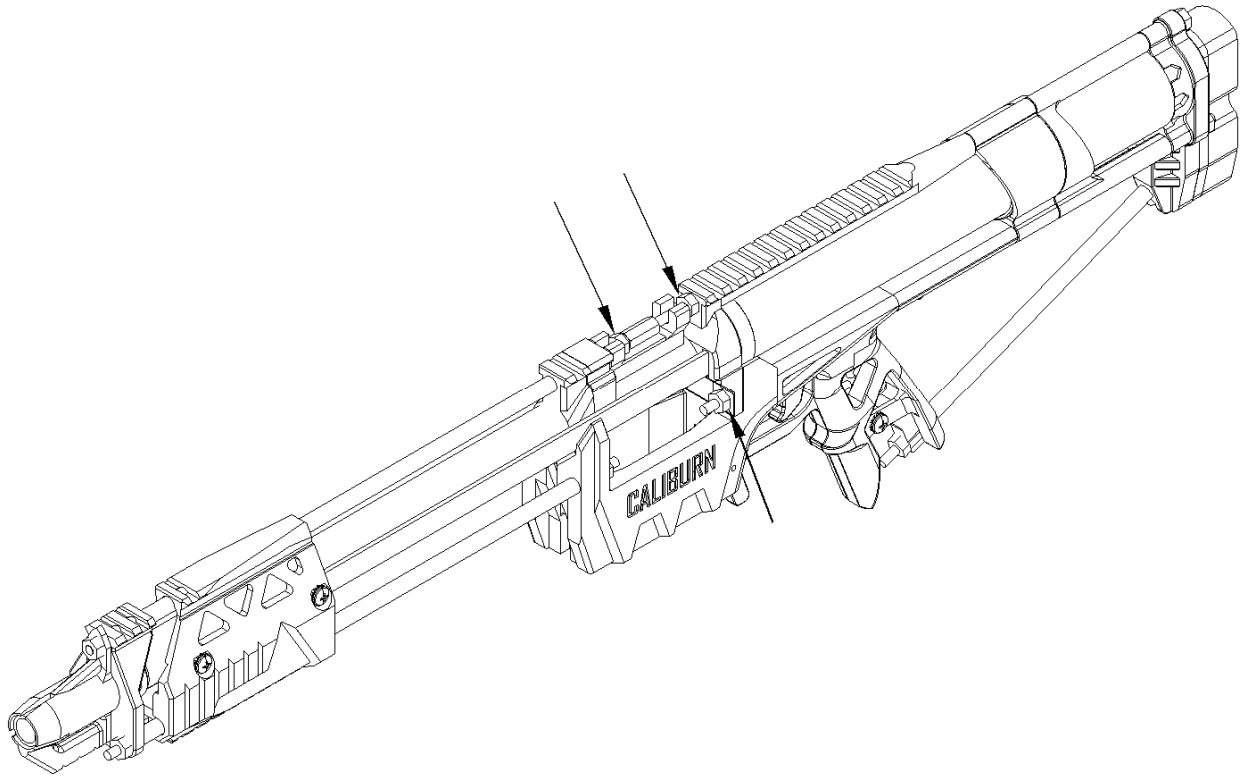
Slide the Main Spring of your choice in through the back of the Stock Assembly. Cap the end with the Butt Assembly making sure that the Main Spring is seated on the post. If the Main Spring gets pinched between the two, use a Slotted Screwdriver to push the Main Spring until it is centered and you can push the Butt Assembly flush against the back of the Stock Assembly.



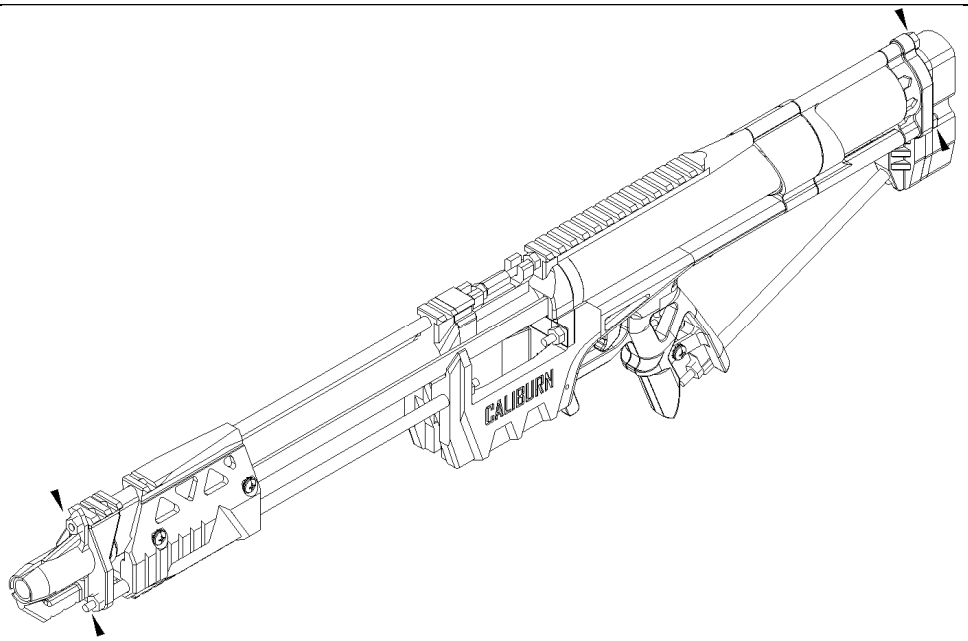
Secure the two assemblies together with two hex nuts where shown.



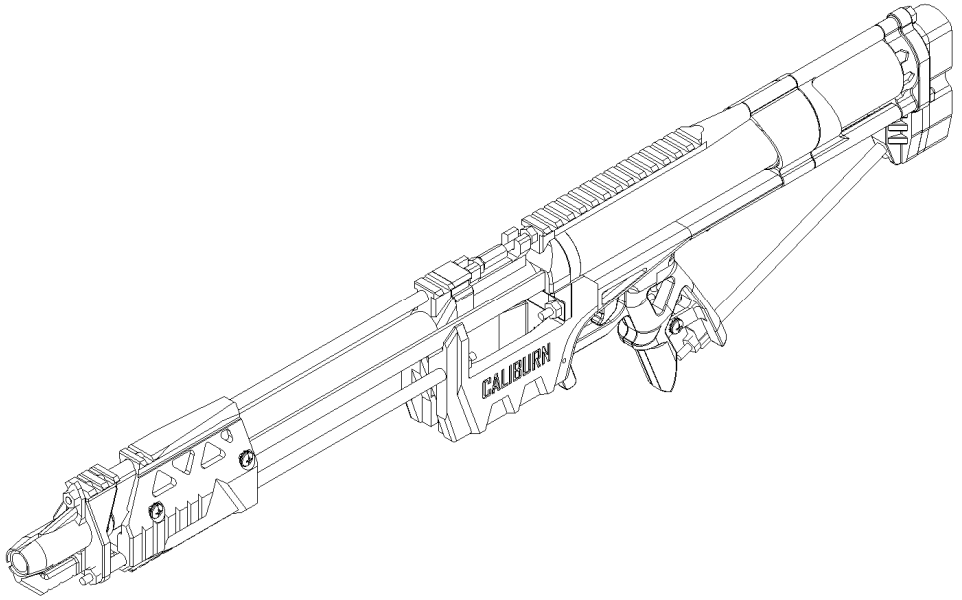
You will need to adjust the positioning of the upper 14" Threaded Rods for this next step, which is why they have not yet been tightened. Slide the Dart Guide onto the front 14" Threaded Rod from the top. Slide the Jam onto both from one side so that the front Hex Nut is behind the tab towards the front of the Blaster. Then rotate the Jam piece until it is oriented vertically.



Tighten both of the lower Hex Nuts against Spreader until all of the components of the rear assembly are pulled together firmly. Tighten both Hex Nuts up top. One against the front tab of Jam, the other against Spreader.



Use six Acorn Nuts to cover the exposed Threaded Rod ends at the front and back of the Blaster.



Install a Magazine loaded with darts and cycle the Foregrip back until the catch engages. Slide the foregrip all of 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.

Removing the Plunger Rod, Main Spring, And Plunger Tube for lubrication or replacement does not require full disassembly of the Blaster. You just need to reverse the last 7 steps in these instructions in order to split the blaster in half.

The Blaster and Hardware Kits are shipped with K26 and K25 springs. The K25 is rated slightly lower than the K26. The third spring option is the K31 (which has to be purchased separately or opted for as a replacement) is 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.