

# 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-springer/>



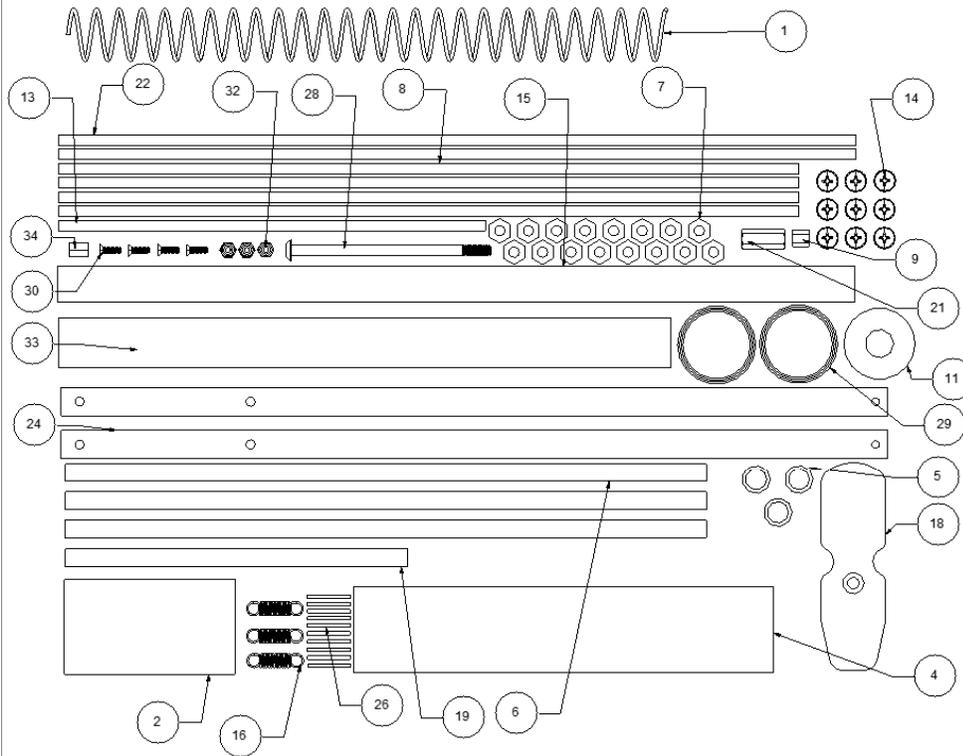
DO NOT STORE IN TEMPERATURES ABOVE 100F. Storing the blaster inside of a car in warmer months will cause the printed parts to distort or warp beyond their intended shape. If you have to store one in a vehicle, store it in the trunk.



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	ButtplateFoil
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

# CALBURN 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

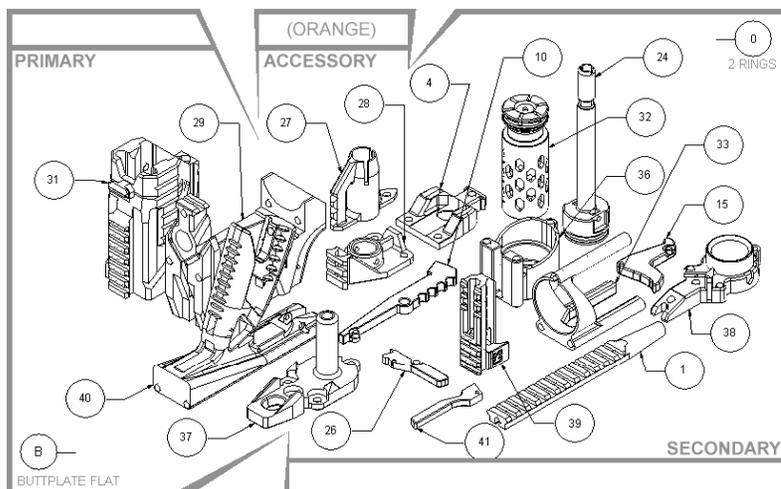
To Assemble this blaster you will need a Slotted Screwdriver, Small Philips Screwdriver, 3/8 Combination Wrench, Needle-Nose Pliers (or hemostats), Round Needle File, and in some cases super glue.

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.

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

12/22/17



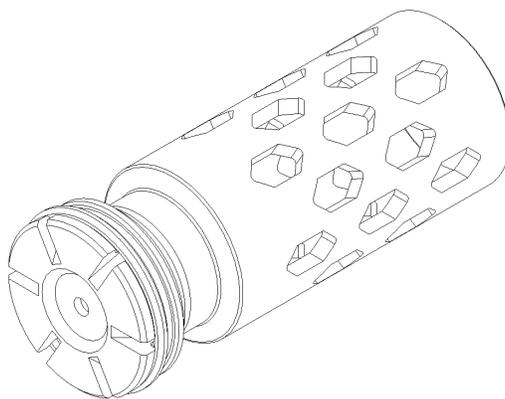
Item #	Quantity	Part Name	Infill %
1	1	rail_top	20
4	1	Spreader	100
10	1	Sear	100
15	1	TriggerAlt	20
24	1	Rem2o	20
26	1	MagRelease2	20
27	1	Muzzle Brake	20
28	1	Muzzle3	20
29	1	MagWell2	20
31	1	Rail_Foregrip	20
32	1	Plunger	20
33	1	Ansuzalgiz2	20
36	1	Stock_Alt5	20
37	1	BackButt	20
38	1	FrontButt	20
39	1	DartJam	
40	1	Grip5	
41	1	Tguard5	

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.

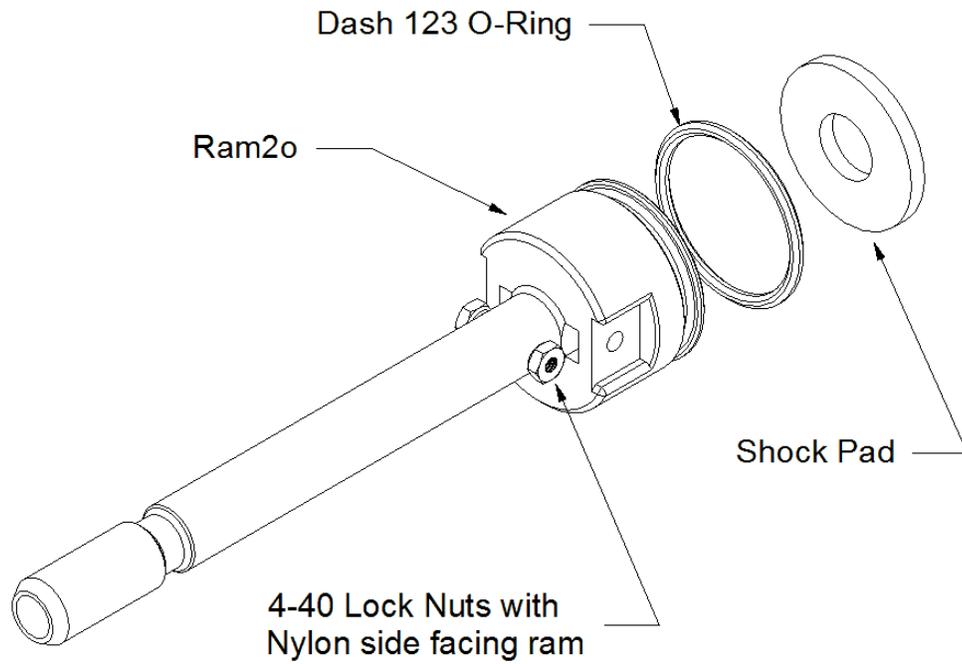
- Captain Slug

Assembly Instructions: <http://www.captainslug.com/herf/Caliburn3DPAssembly4.pdf>

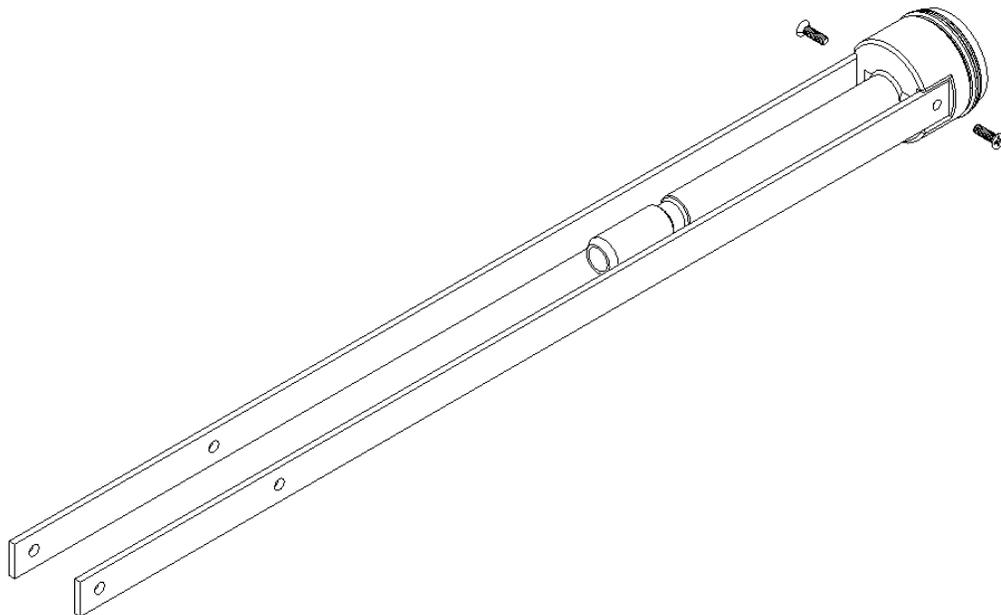
Above is a list of every printed part needed to assemble this blaster. The majority of the through holes should print to the required tolerance, but you will likely have one or two that may require minimal filing. Also make sure to trim off any burrs or oversized edges.



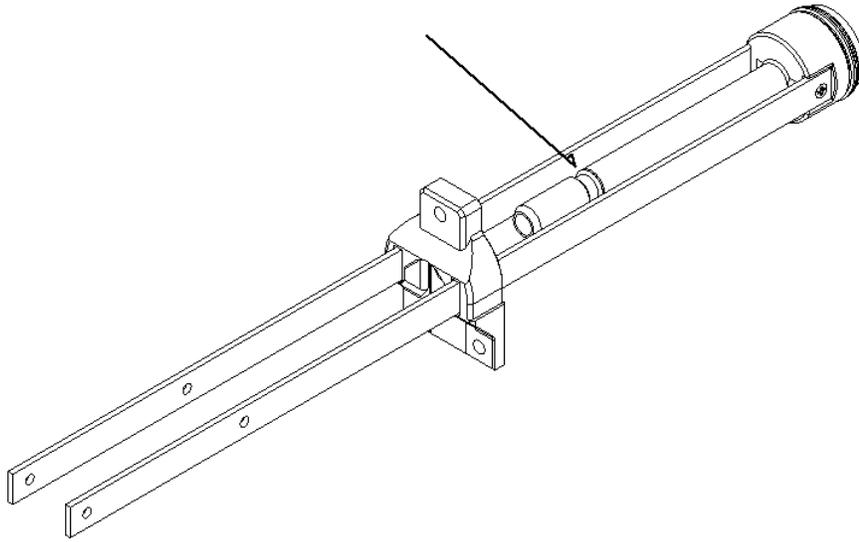
Add a Dash 123 O-Ring to the groove of the Plunger then set aside.



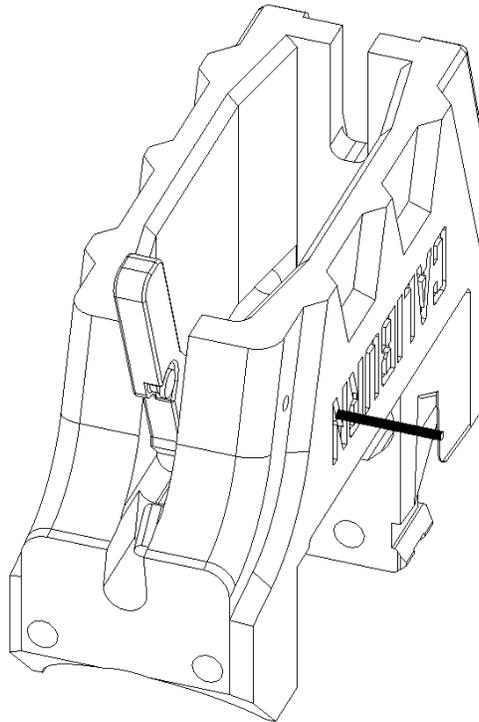
Adhered the Shock Pad centered onto the back of the Ram. Add a Dash 123 O-Ring to the groove on the Ram. Slide two 4-40 Lock Nuts into the slots in the front of the Ram so that their Nylon side is facing the center of the Ram.



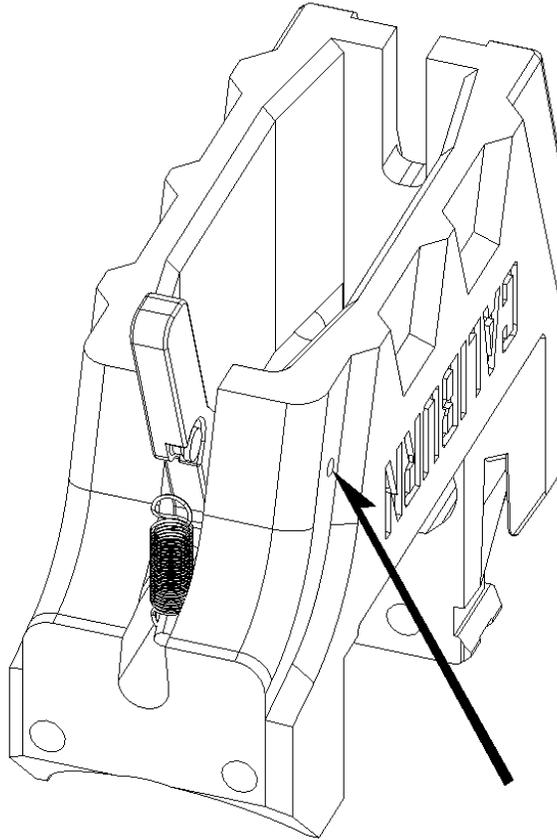
Add two Bolt Arms to the Ram Assembly and secure them with two short 4-40 screws.



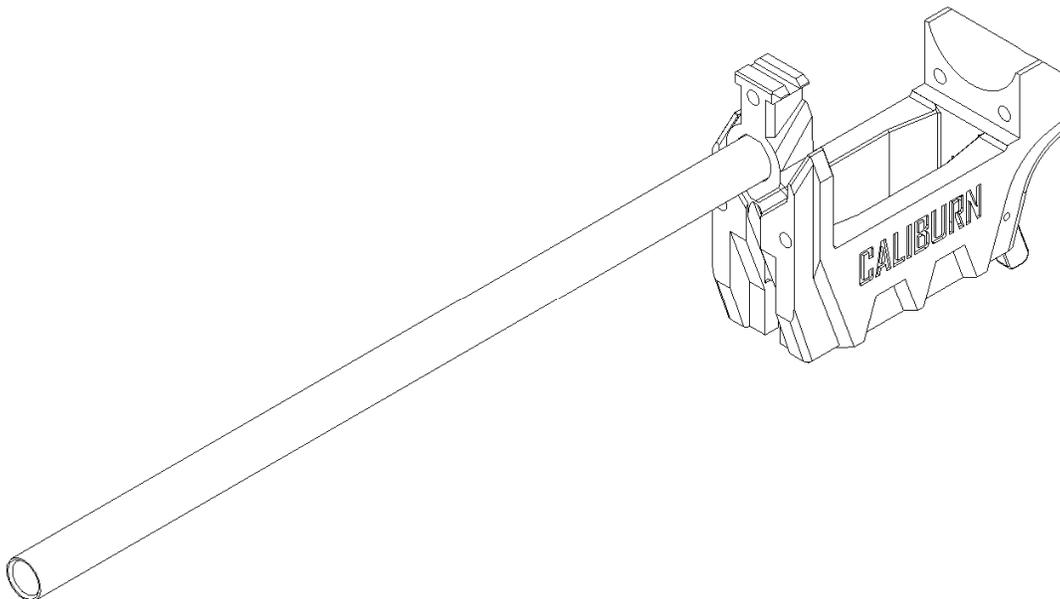
Slide a Spreader over the pair of Bolt Arms. Add an O12 O-ring to the undercut in the Ram (if it is present). Set this assembly aside temporarily.



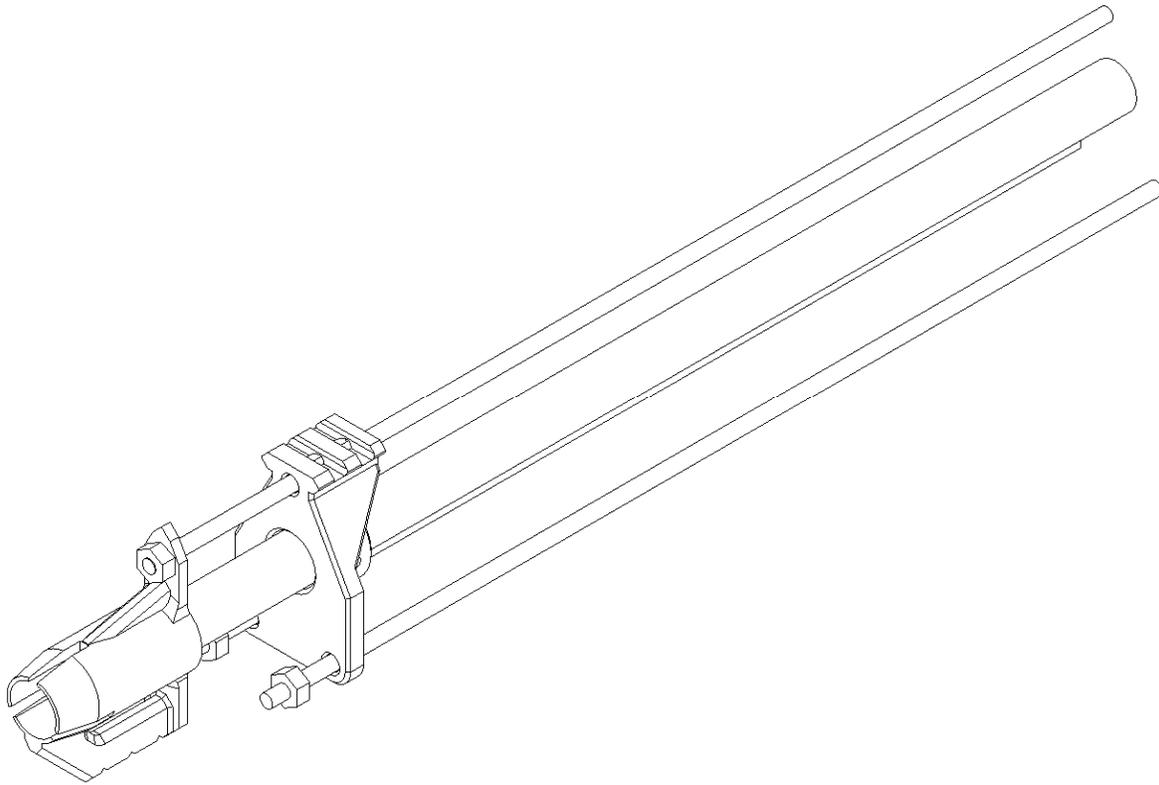
Insert a Short Pin through the MagWell and the Mag Release. You may need to use an extra short pin and a hammer to lightly tap it through the MagRelease.



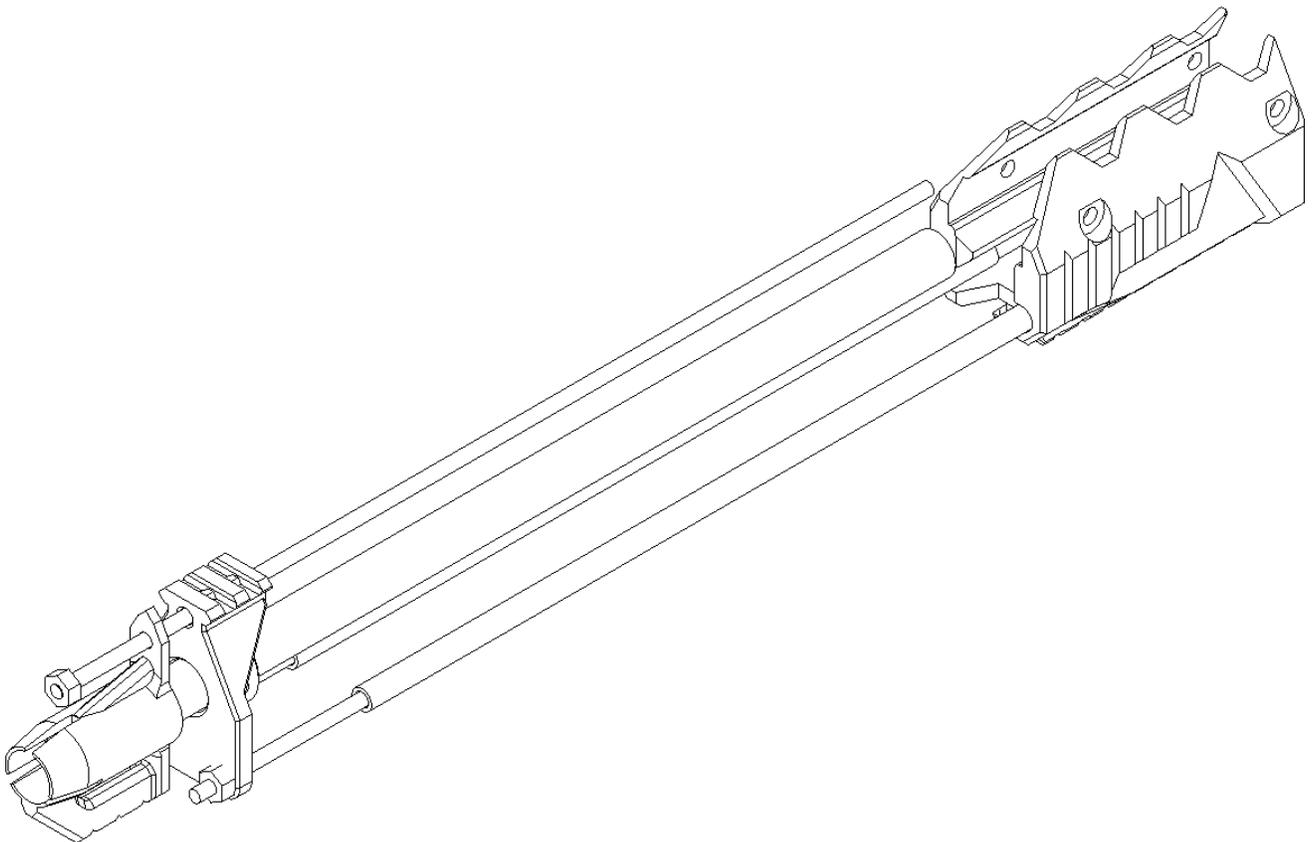
Fish one end of an extension spring onto the hook inside the back of the Magwell. Pull the remaining loop of the Extension Spring onto the peg on the Mag Release. Apply Super Glue to the indicated hole in left left side of the Mag Well or cut a very short section of Dash 123 O-Ring and plug the hole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



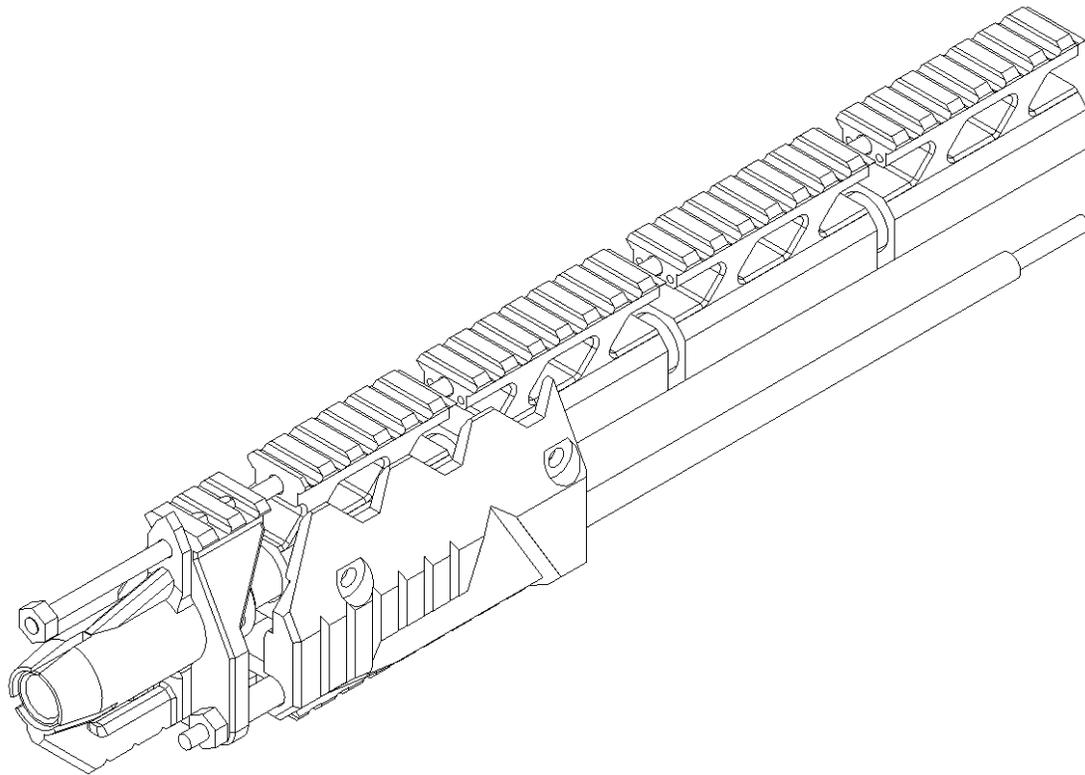
Install the Chamfered side of the Barrel into the Magwell to check the fit. You may need to file this hole out with a Round Needle File prior installing the barrel. The inside of the Magwell can be rested on the edge of a desk or table in order to push the Barrel in. After confirming the fit, remove it from the Magwell. Set the Magwell aside.



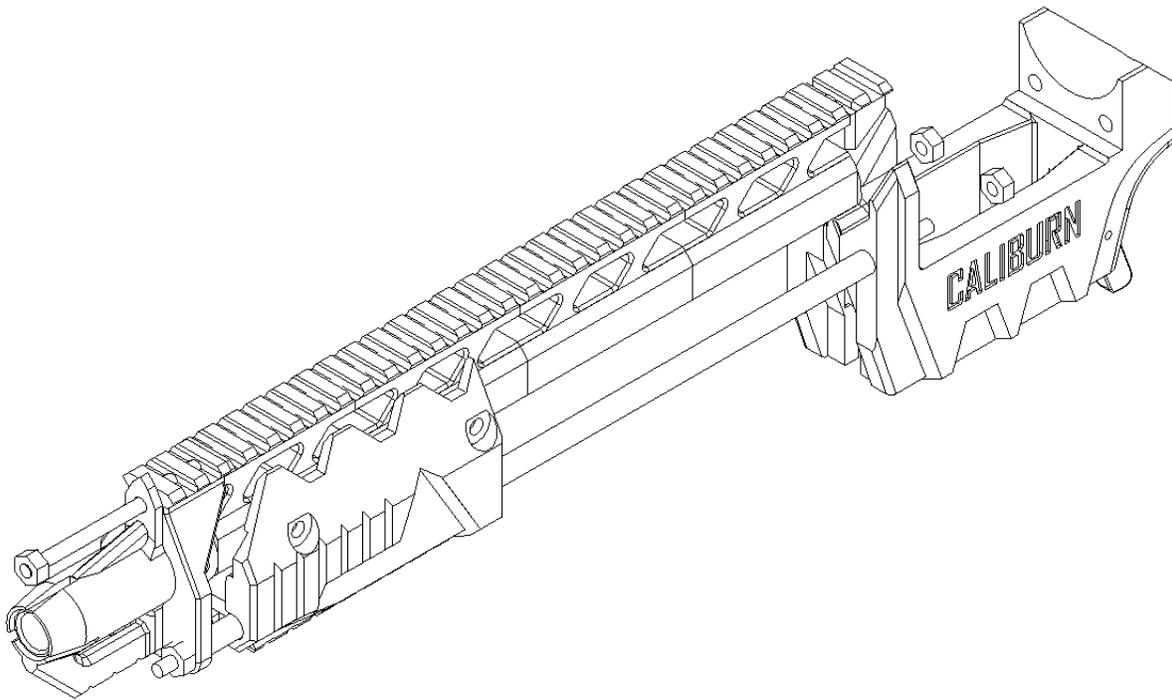
Slide a 14-inch threaded rod through the top hole of the MUZZLE BRAKE and MUZZLE parts. Slide the Barrel through both. Slide two 13-inch threaded rods through the lower pair of holes in the MUZZLE.



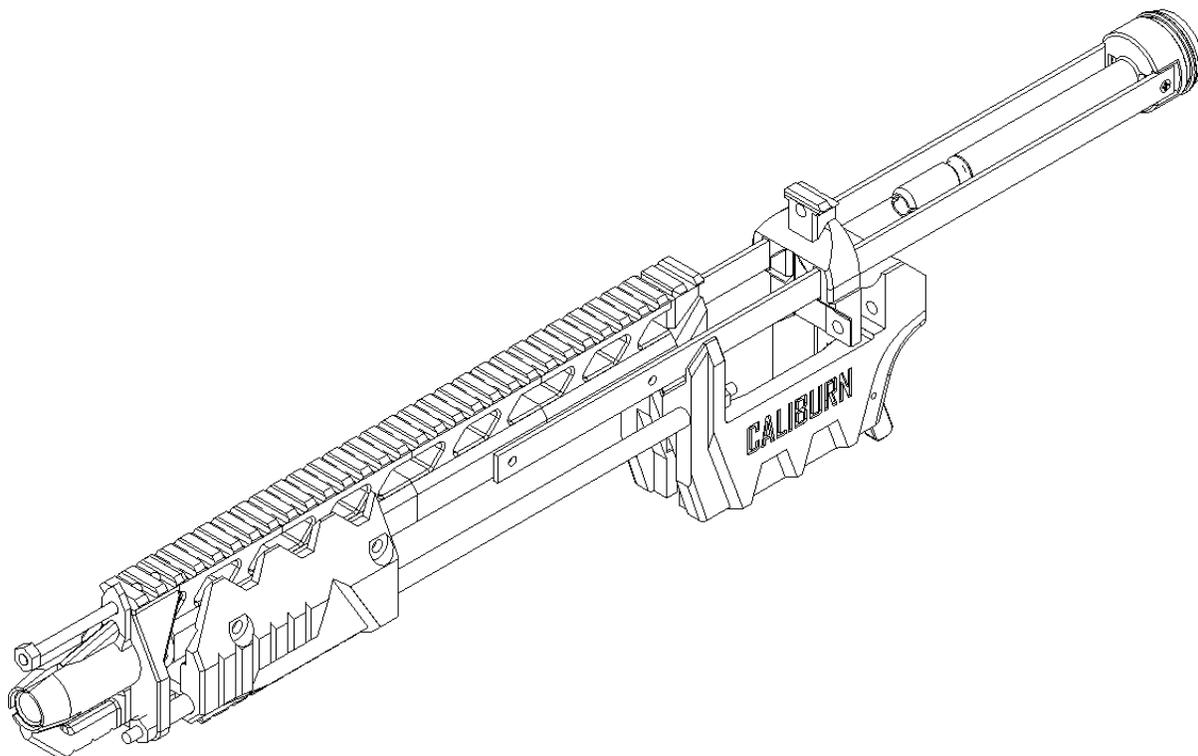
Slide two 11.25 inch length spacers onto the lower threaded rods. Also slide the FOREGRIP onto them.



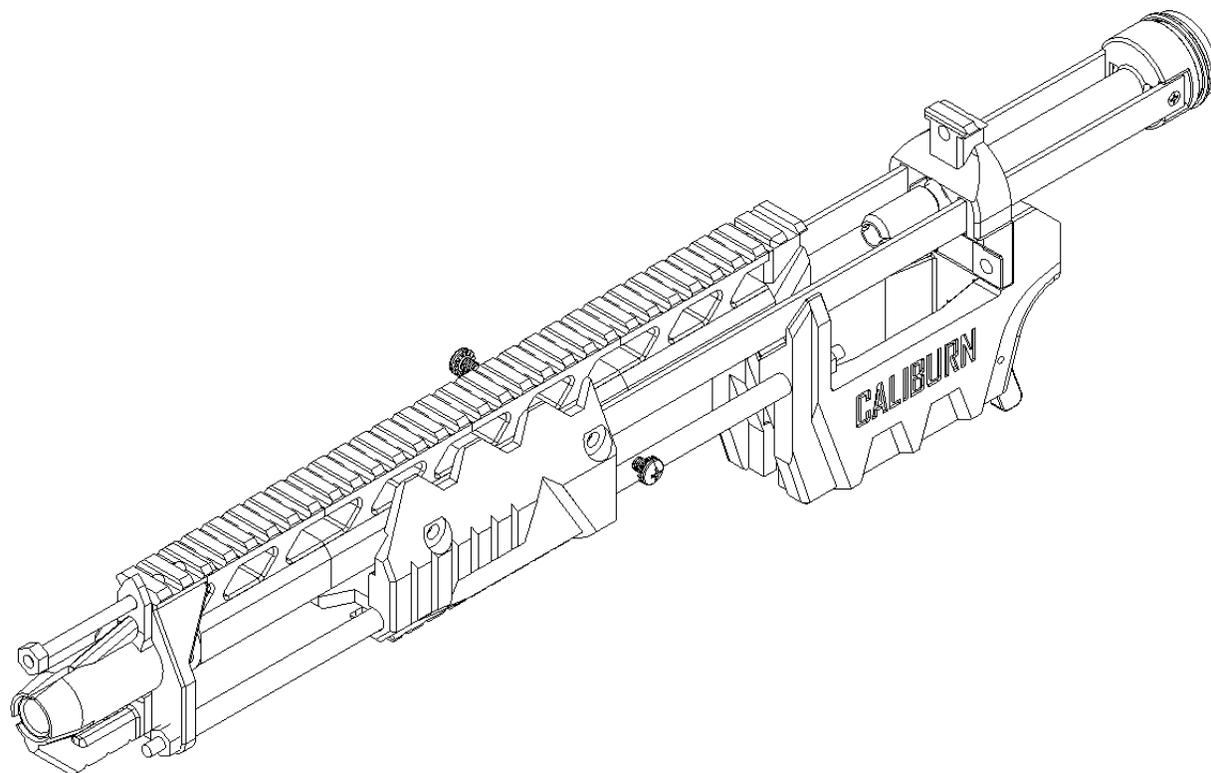
Slide the Barrel Shroud over the barrel and upper threaded rod. You have the option of pinning the segments together with short pins if desired.  
If you do not have the printed segments slide the separate barrel shroud over the barrel and the third 11.25-inch spacer onto the upper threaded rod.



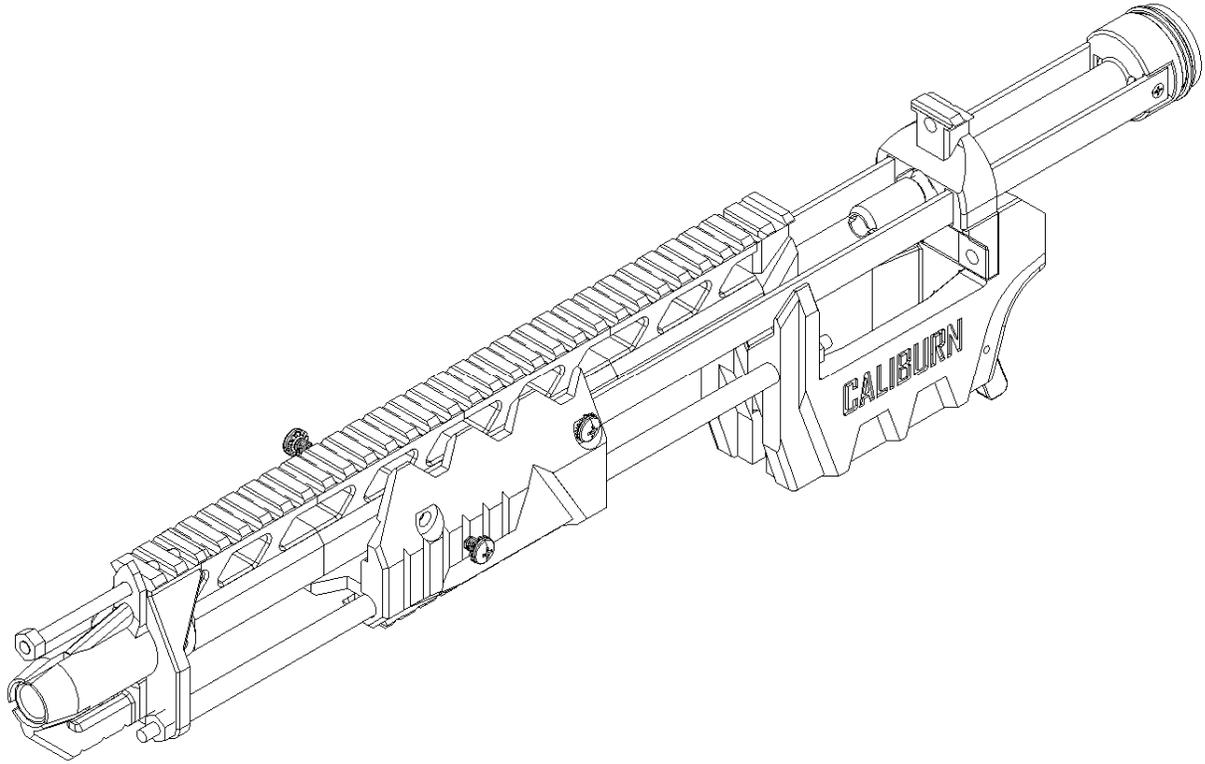
Slide the exposed threaded rods through the pair of holes in the front of the MAGWELL. Also slide the barrel into the magwell and check that it is flush with the inside. Add a hex nut to each threaded rod and tighten them.



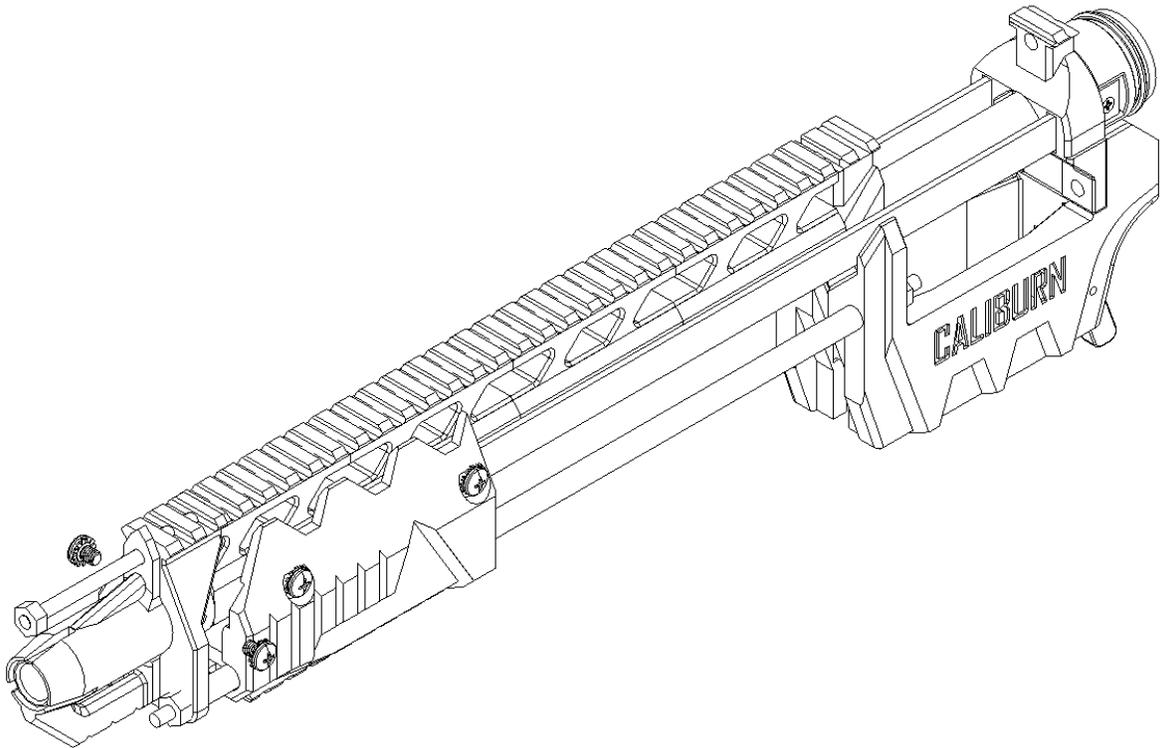
Install the Bolt Assembly by sliding it into the Mag Well from Above. Make sure that the Spreader part is ahead of the lip at the back of the Mag Well.



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 rear pair of holes using two 1/4" length screws. You may need to use a second screddriver or other hand tool to push the aluminum against the inside of the Foregrip so the screws can reach it.

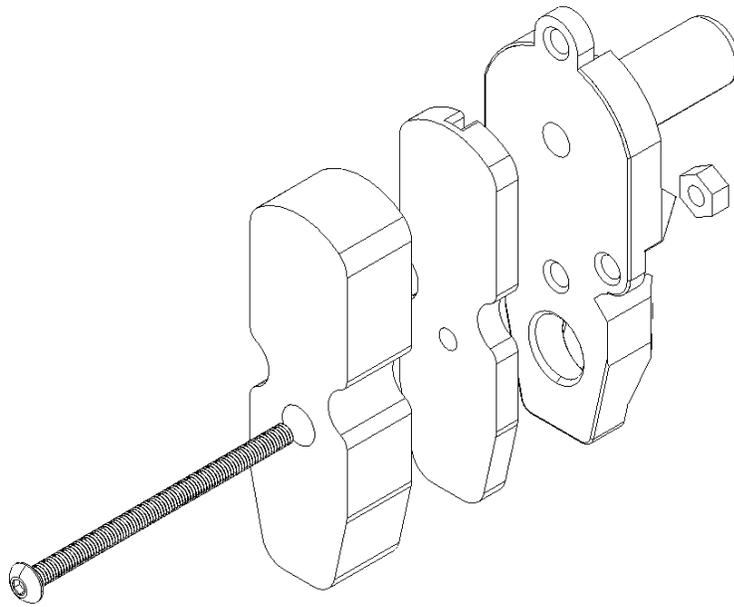


Secure the front half of the Foregrip with two more 1/4" length screws. Then slide the Foregrip forward.

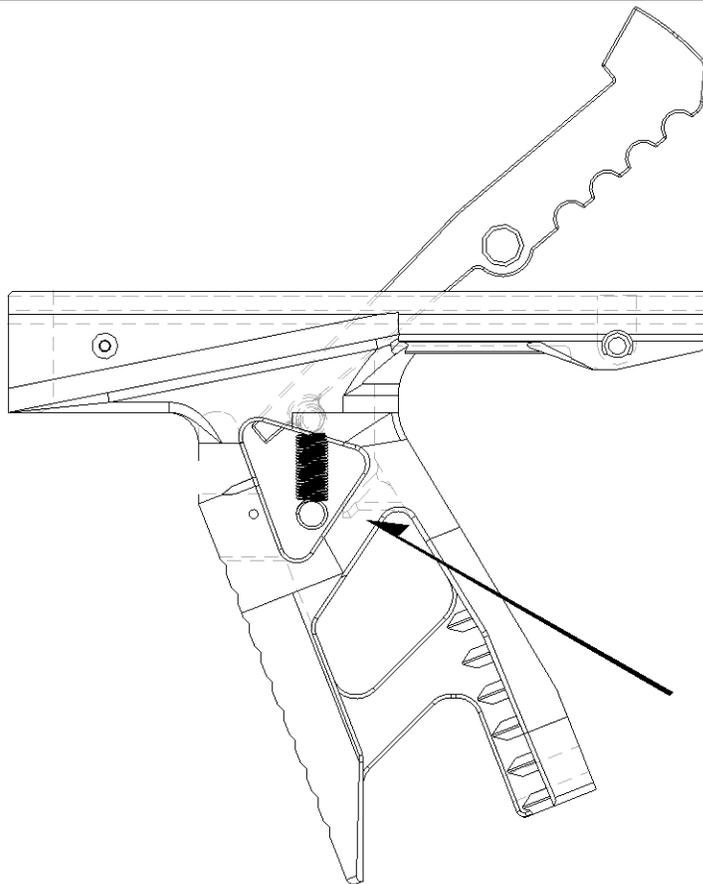


Confirm that the Barrel is still flush with the inside of the MagWell. The Barrel can be secured using two 1/4" length screws if the Muzzle has been tapped for them. Otherwise the barrel needs to be glued to the Muzzle using Super Glue or a strong epoxy such as Devon Plastic Weld or Plexus MA310.

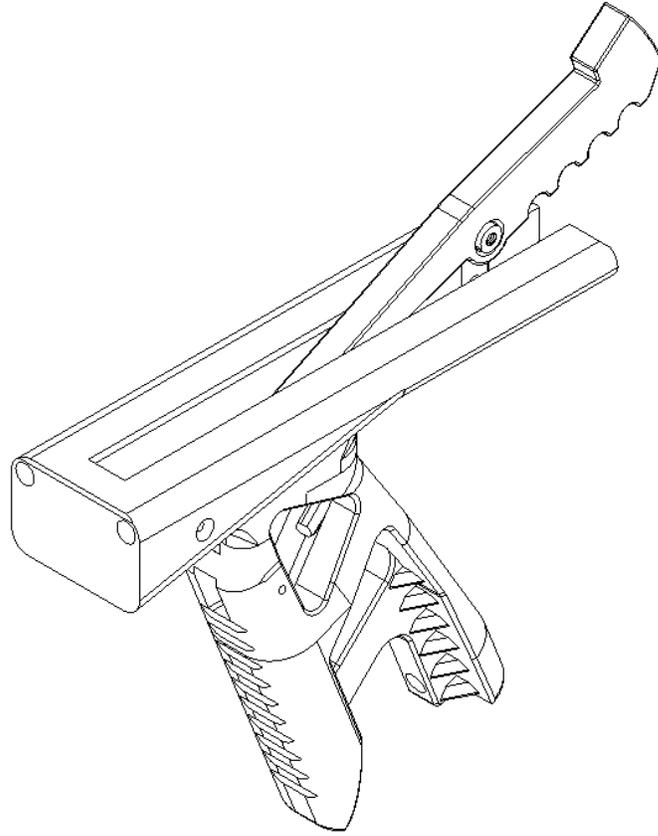
The assembly of the front half of the blaster is now complete.



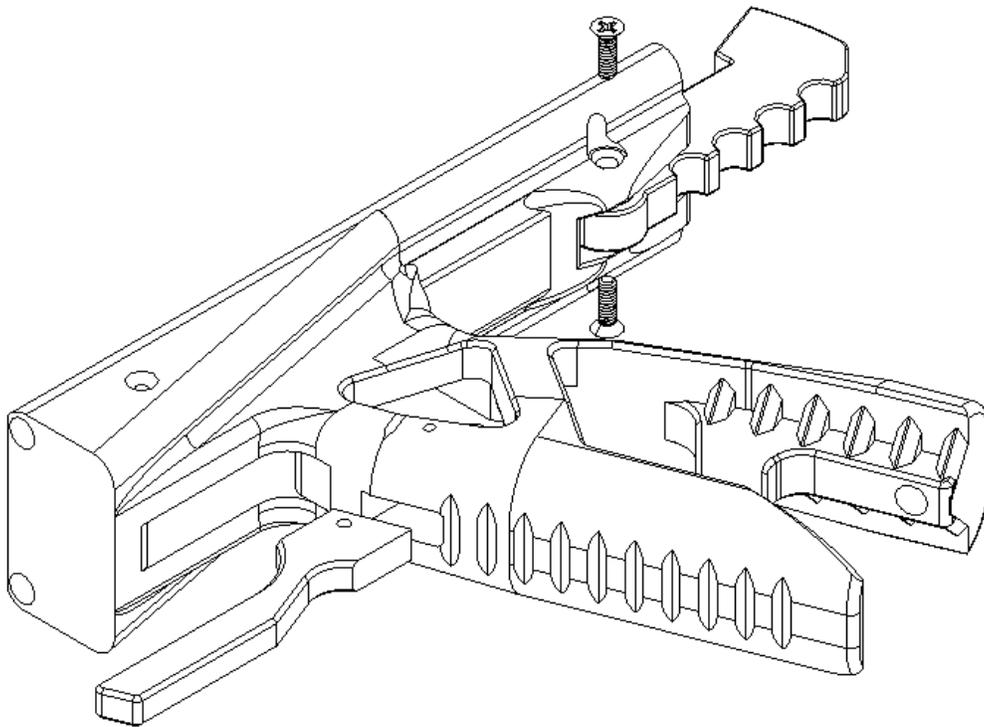
Adhere the Buttplate Foam to the Buttplate. Attach the Buttplate to "Back Butt" using the Long Screw and a Hex Nut. Set aside for later.



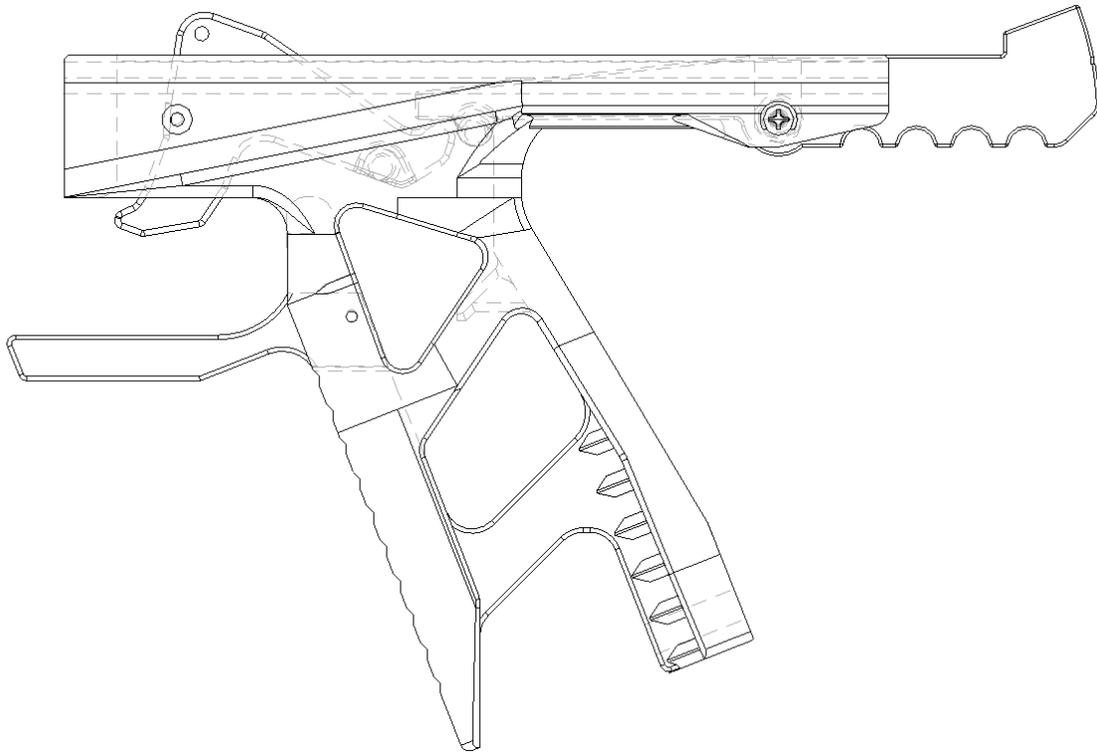
Add an extension spring to the peg on SEAR and use SEAR to fish the extension spring into the grip. Push the loop of the extension spring onto the hook inside of the grip.



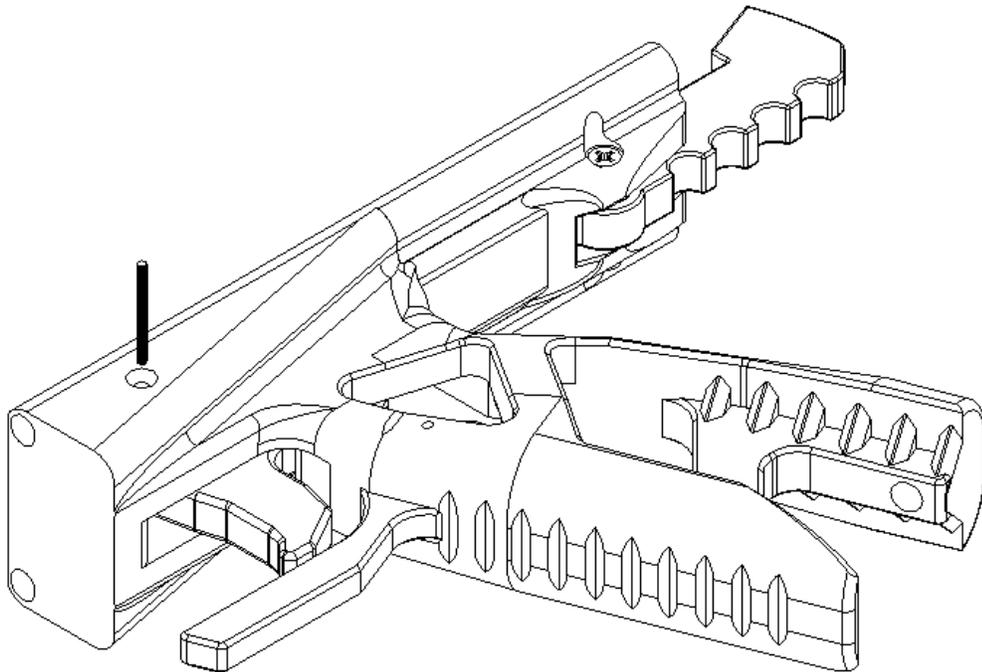
Insert the 4-40 standoff into the center hole of the SEAR and pivot it down towards the back of the grip.



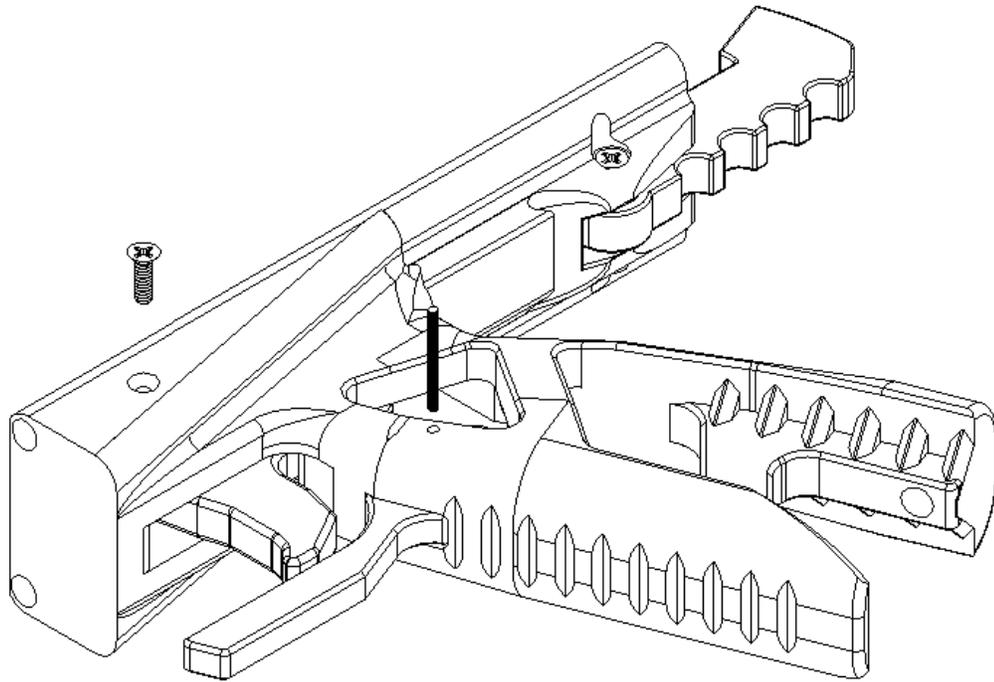
Use two short 4-40 screws to secure the standoff to the back of the grip. Slide the TGUARD5 piece into the slot in the front of the grip.



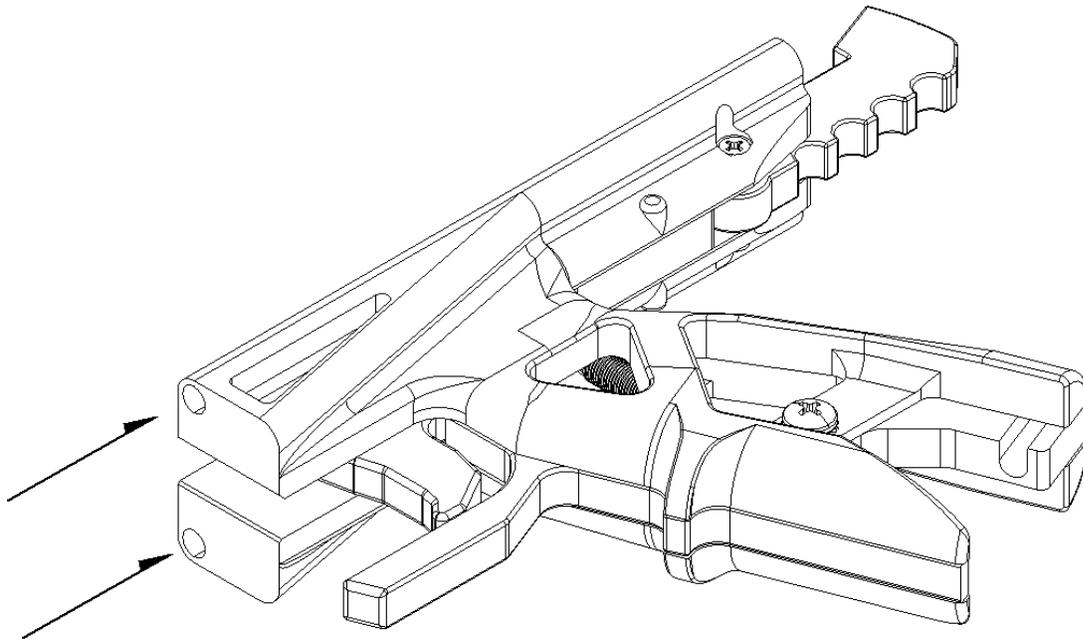
Fish the TRIGGER in through the front of the grip. You may need to pivot the SEAR back in order to get the TRIGGER in place. Once in place, the bump on the back of TRIGGER needs to sit underneath the front lip of the SEAR.



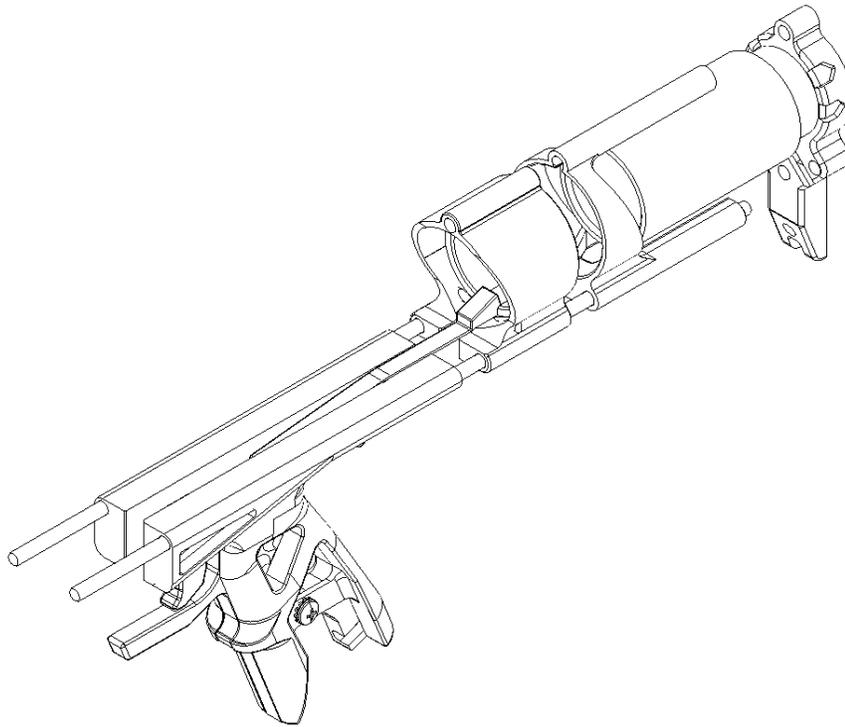
Slide a Short Pin in through the side of the grip and through the hole in the TRIGGER. You may need to use a 1/16" drill bit or another Short Pin and a hammer to lightly tap it through the trigger.



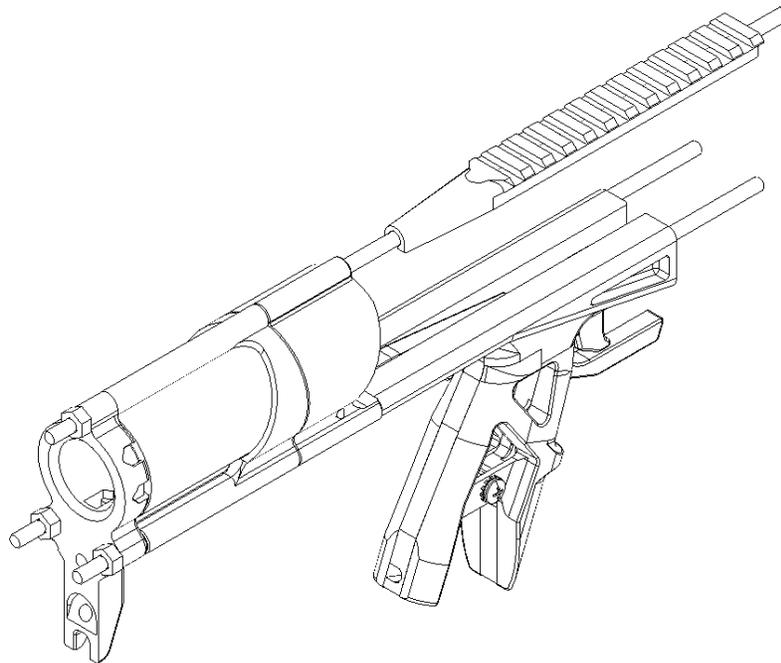
You can use a 4-40 short screw or a spot of glue to retain the Short Pin for the trigger. Insert another short pin into the grip and through the TGUARD5 piece to secure it. Tap it into place lightly with a hammer if needed. If the fit was too loose, apply from super glue and set it aside to dry.



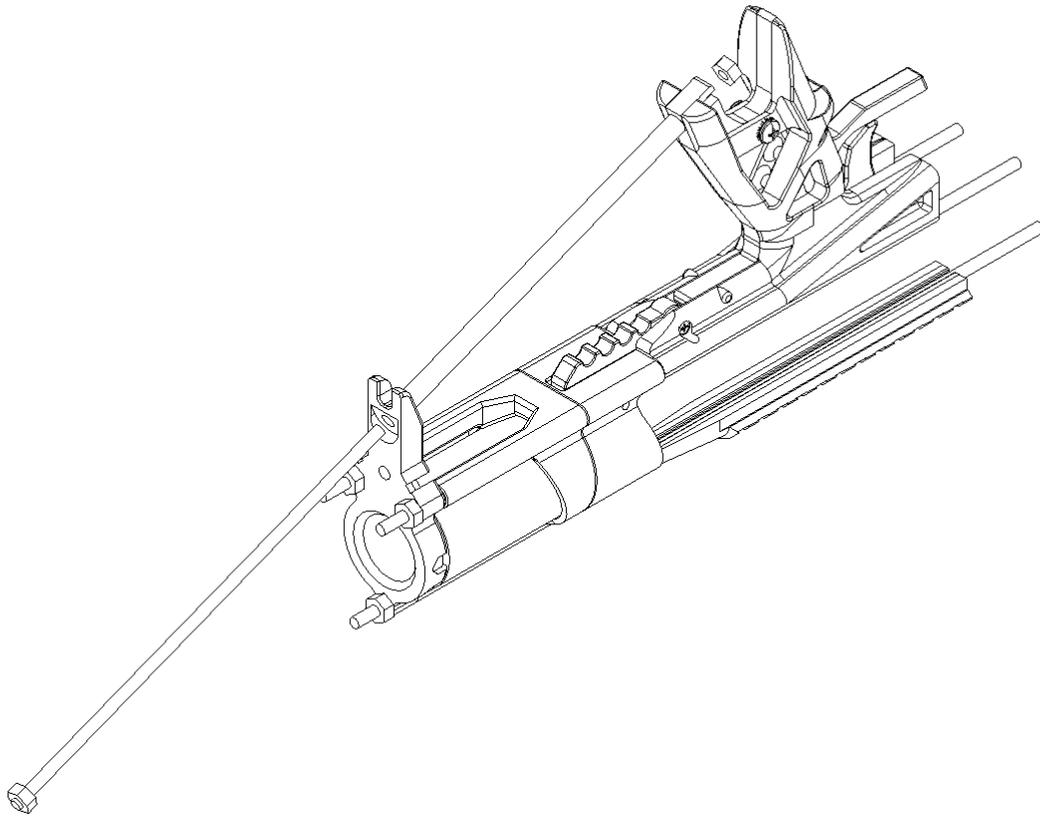
Slide a 13" Threaded Rod through Each Grip panel



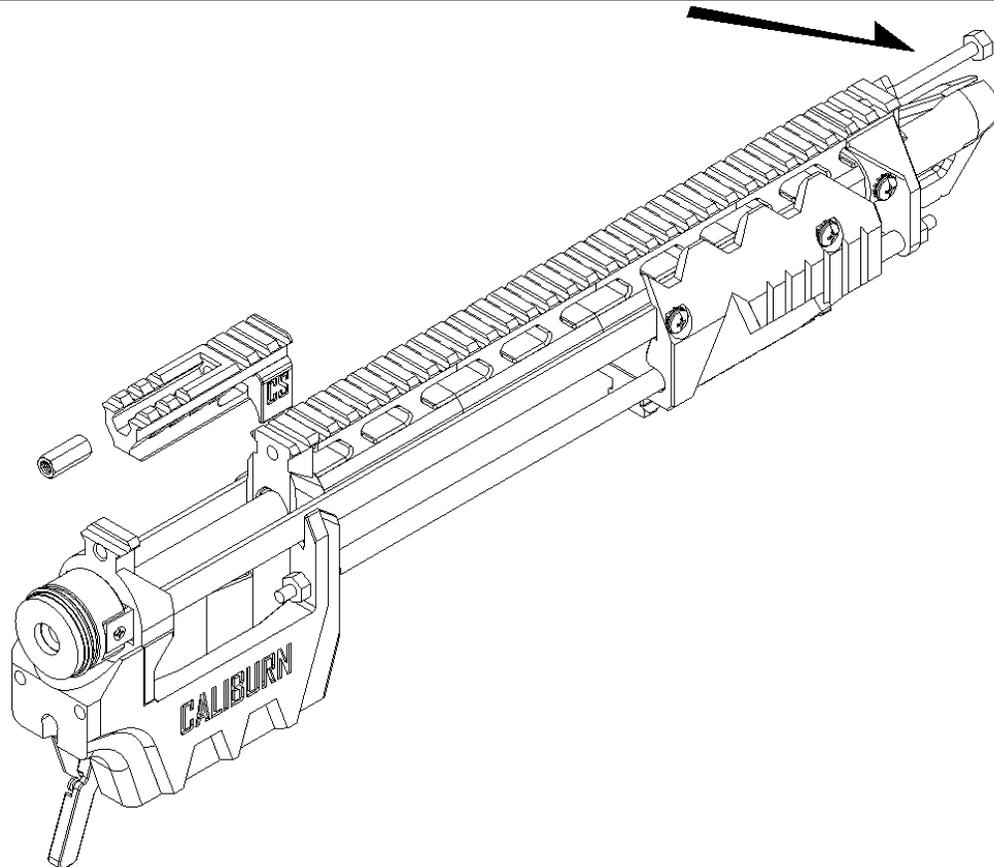
Slide the parts shown onto the 13" Threaded Rods. They include Stock\_Alt5, Ansuzalgiz2, Stock Spacer (clear), and "Front Butt".



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.

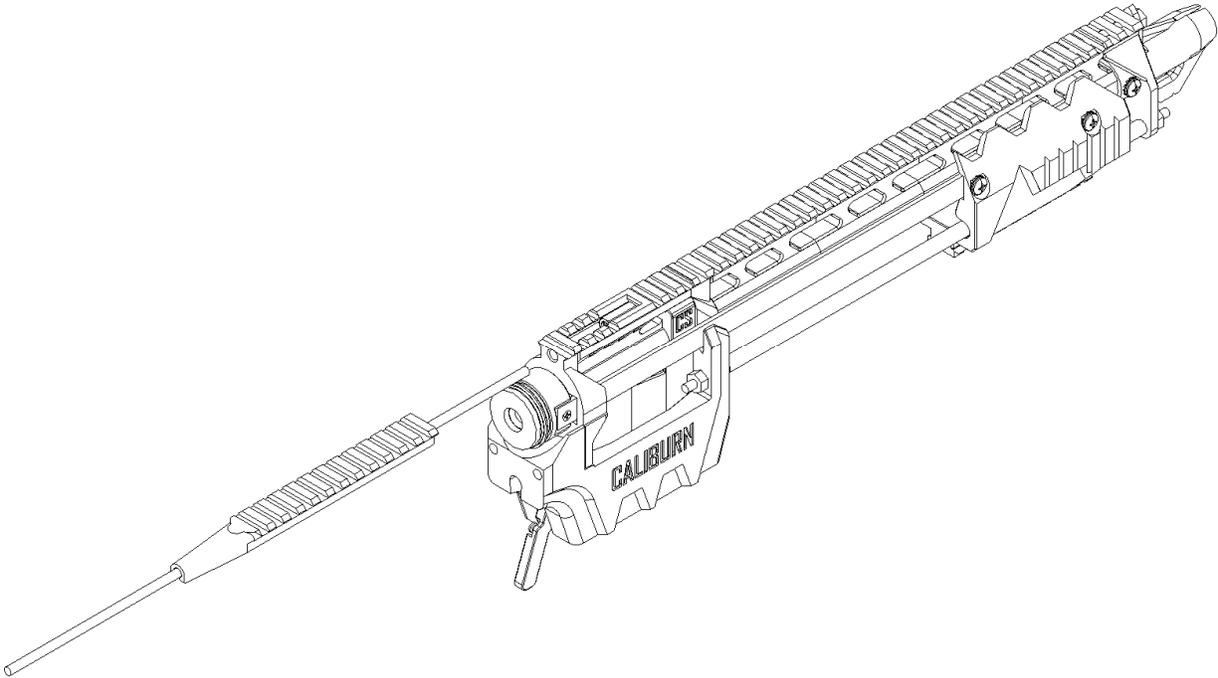


Wedge the 6" spacer inbetween the heel of the Grip and the front angled surface of the "Front Butt". Add a Hex Nut to the very end of the 8" Threaded Rod and then slide it in through the counterbored hole in the "Front Butt". Add a Hex Nut to the opposite end of the 8" Threaded Rod and tighten.



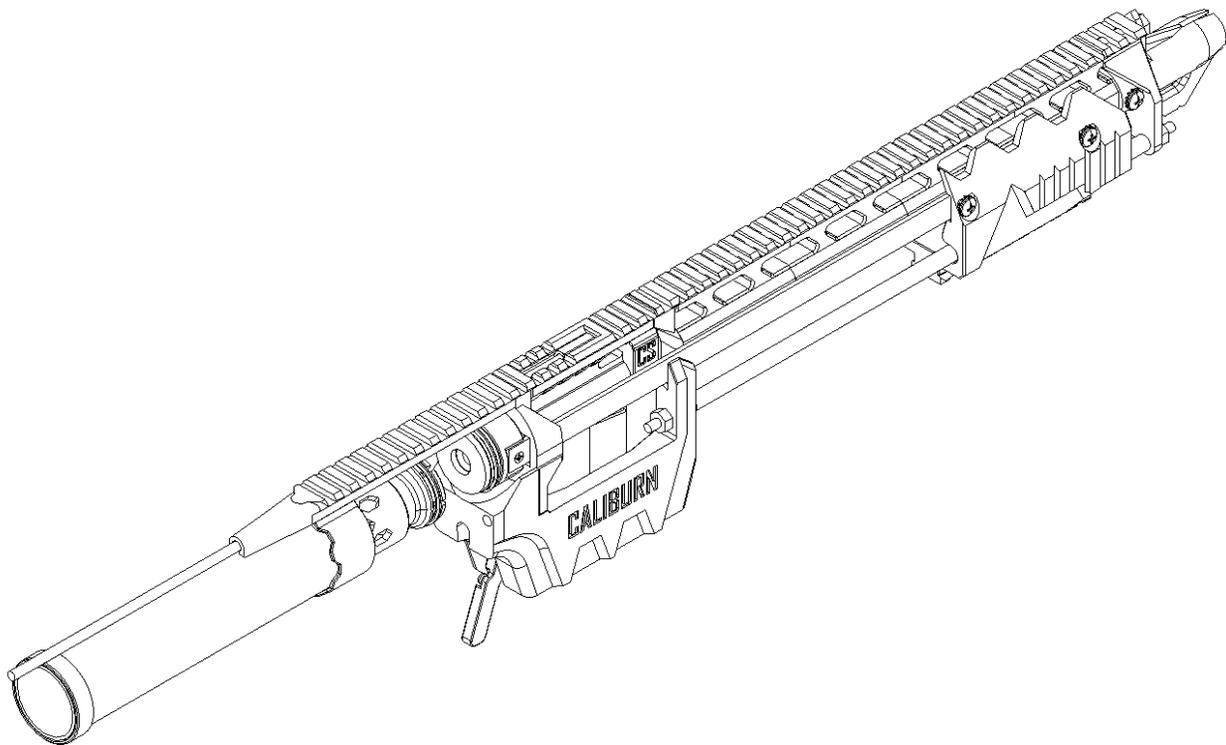
Make sure that the upper 14" threaded rod is slid forwards so that it is not poking out backwards into the magwell area. Slide a COUPLING NUT into the hex channel of the DARTJAM piece, then wedge the DARTJAM piece between the

SPREADER and MAGWELL parts. Slide the upper 14" threaded rod backwards again and screw it into the COUPLING NUT by adding an acorn nut to the expose end of it and turning it with a wrench.

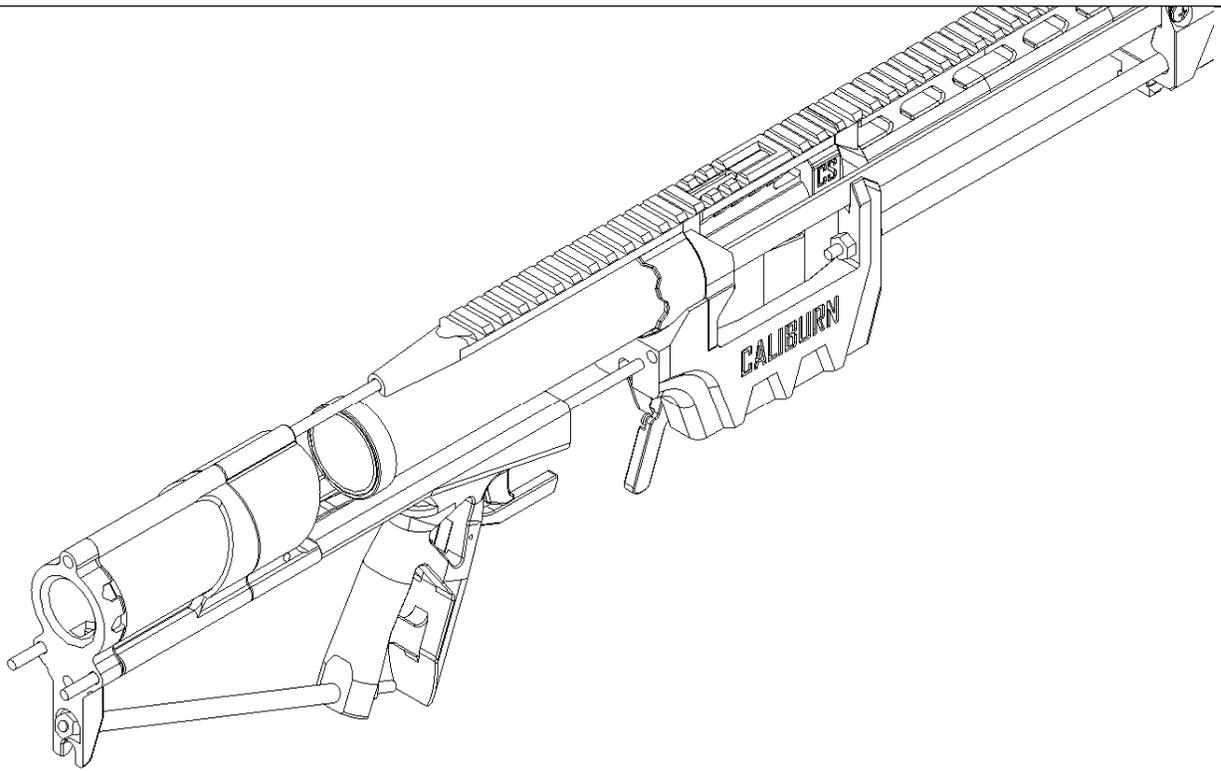


Slide another 14" threaded rod into the back of the Front Assembly and screw it into the coupling nut by hand. 4 or 5 turns should be enough.

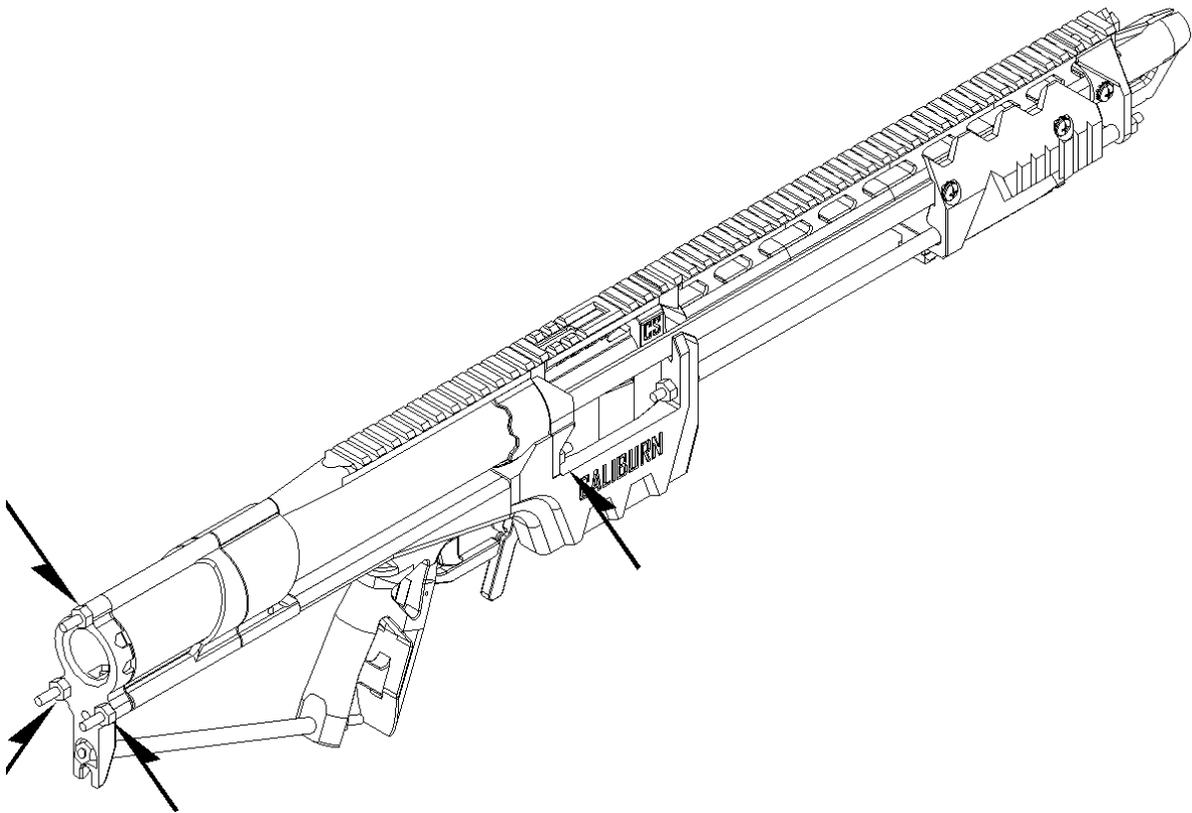
Then slide the RAIL\_TOP assembly onto the threaded rod. The RAIL\_TOP sometimes is printed in two halves that will need to be slid together with a pair of Short Pins.



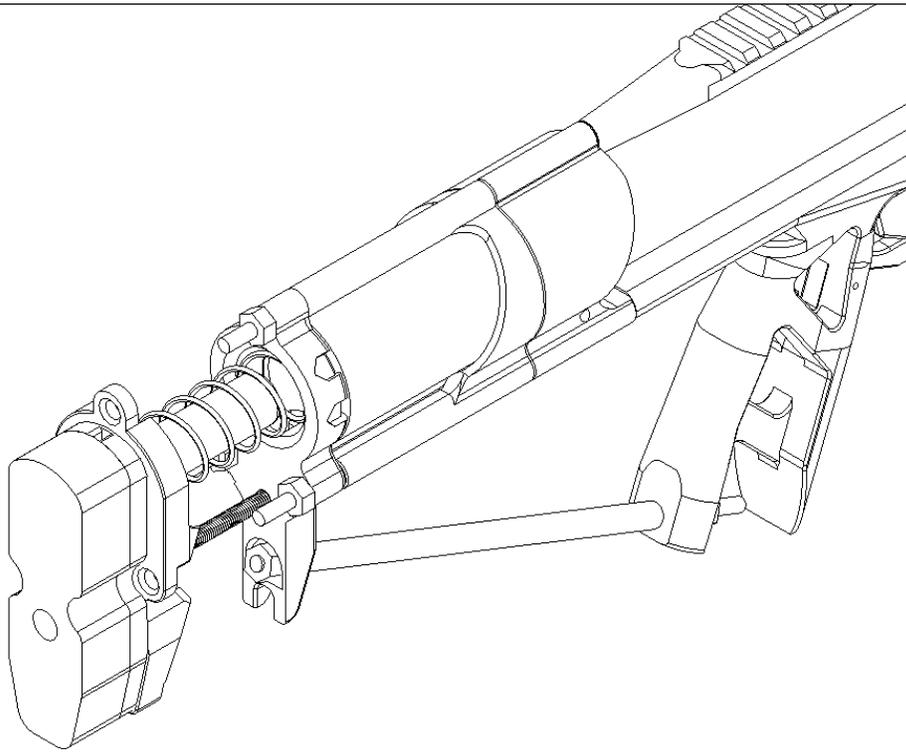
Slide the PLUNGER backwards into the lubricated front end of the PLUNGER TUBE assembly, then slide the PLUNGER TUBE assembly forwards onto the back end of the BOLT assembly. You may need to push the o-ring in a few spots to get it to cooperate.



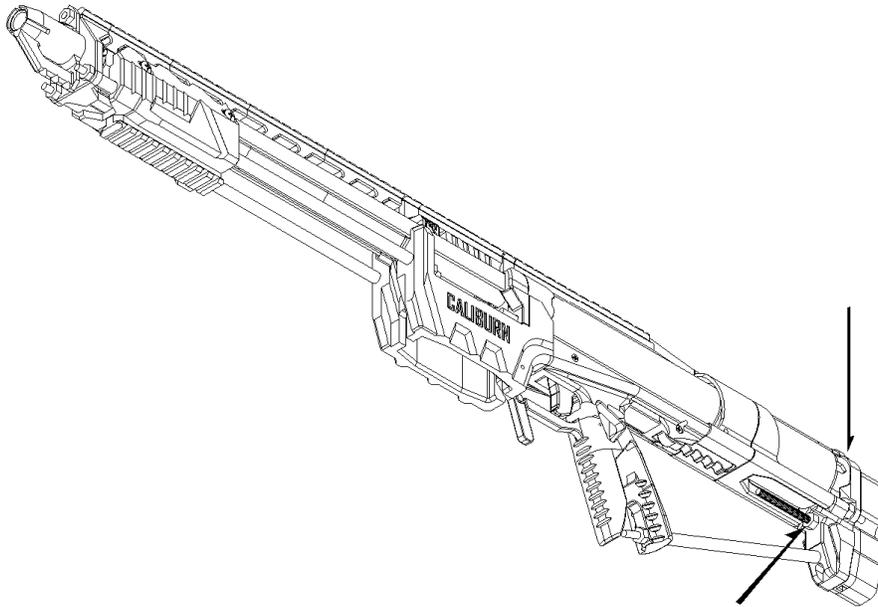
Slide the two assemblies together.



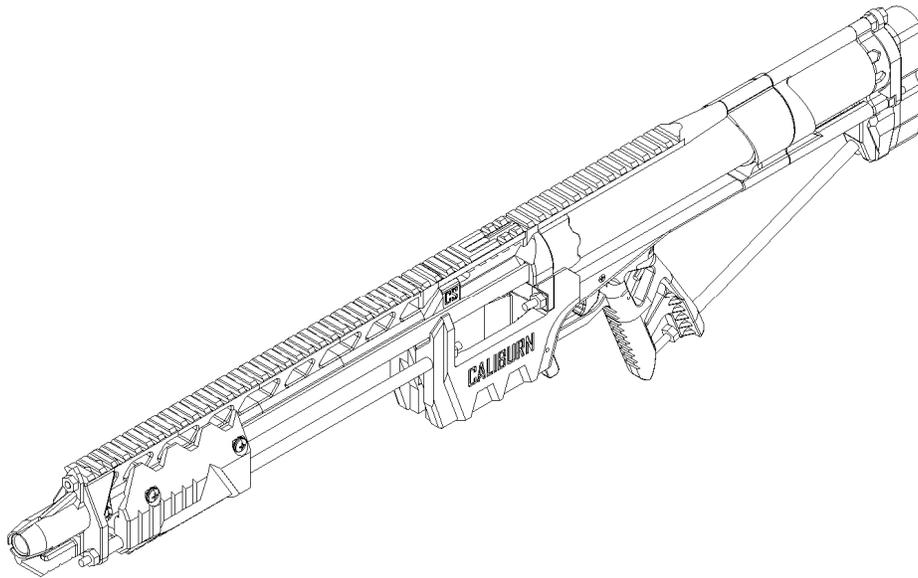
Add hex nuts to the exposed threaded rod ends ahead of and behind the stock assembly. Tighten the hex nuts at the rear of the stock assembly.



Install a main spring of your choice into the back end of the stock. Slide the Buttplate assembly long screw through the hole in the stock, the post onto the mainspring, and then the holes onto the exposed threaded rods.



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



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 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 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.