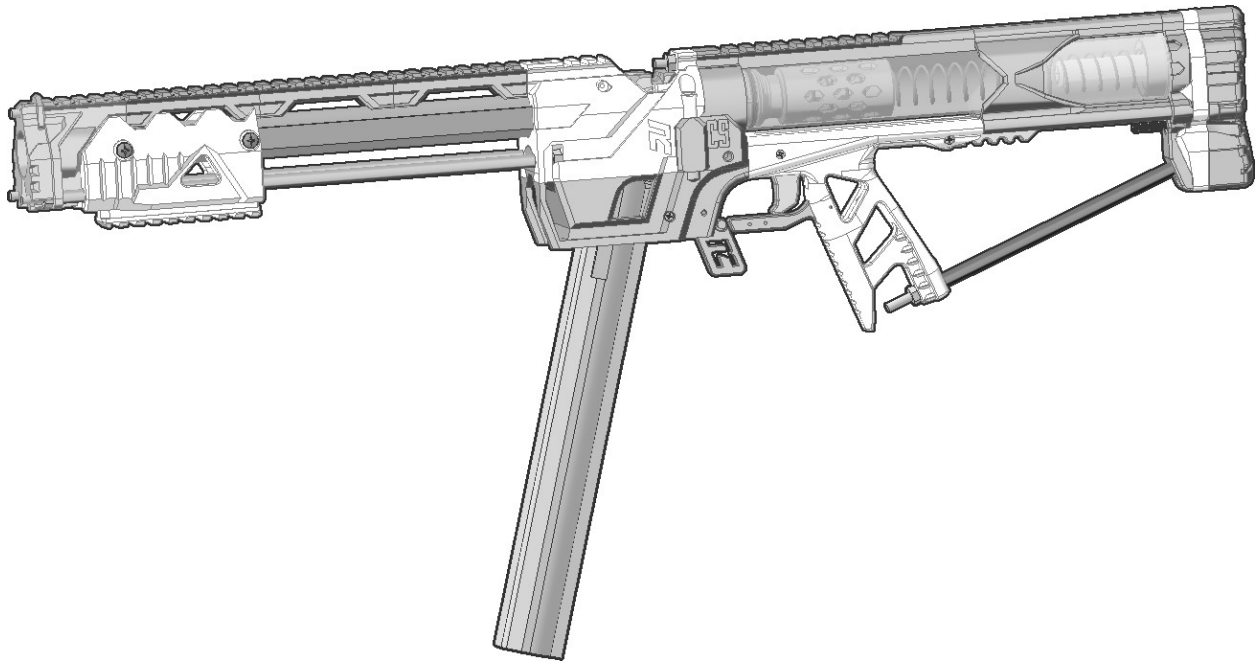


RIVAL CALIBURN ASSEMBLY



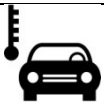
The RIVAL Caliburn is a Mag-Fed Pump-Action Homemade Nerf Blaster design released as a Public Domain license file set by Captain Slug (<http://www.captainslug.com>).

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 with 2mm perimeters: Sear and Milan Coupler. If possible, print those parts out of ABS.

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.

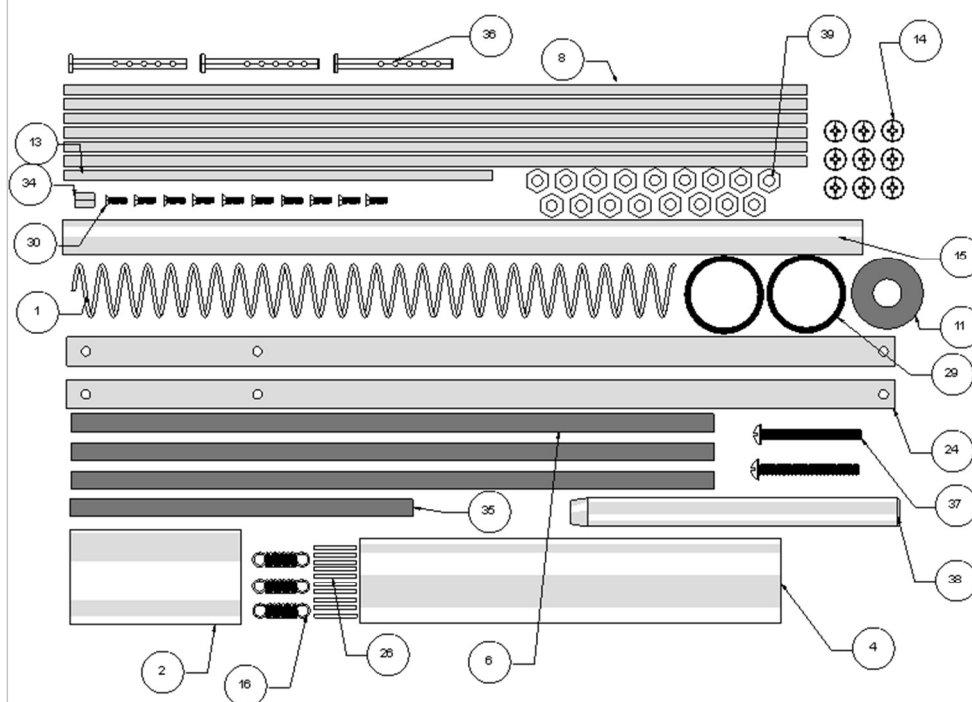
<https://www.etsy.com/shop/CaptainSlug>



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 100fps and 150fps depending upon the spring installed.



Item #	Quantity	Part Name
1	1	K25 Spring
2	1	StockSpacerAlt2
4	1	Plunger Tube
6	3	11.25" Spacer
8	6	13" Threaded Rod
11	1	ShockPad
13	1	8" Threaded Rod
14	9	Screws
15	1	Barrel
16	3	Extension Springs
24	2	BoltArm
26	10	Pin Short
29	2	Dash 123 O-Ring
30	10	4-40 Short Screw
34	1	4-40 Standoff
35	1	Spacer6.625
36	3	Takedown Pin
37	2	1-3/4" Length Screw
38	1	RamRod Core
39	17	10-32 Hex Nuts

CALBURN HARDWARE KIT

1/30/19

Printed Parts NOT included.

Tools needed: Philips Screwdriver, 3/8 Combination Wrench, Round Needle File

For most of the above hardware list the quantities are the MINIMUM required for assembly. Easily-lost items will have several spares 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, and a Round Needle File. You may also need a 3/16" drill bit and a SLOW power drill.

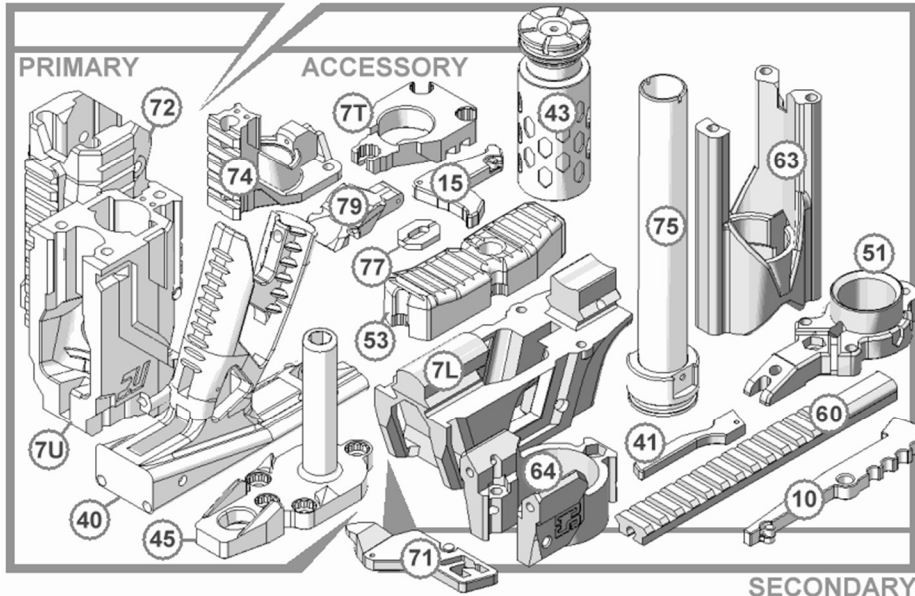
The Plunger Tube in the Hardware Kit does come pre-lubricated. But it's also a good idea to have extra lubricant on-hand for the Plunger Tube and I would recommend only using a clear Silicone Grease such as Oatey's brand #30219.

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.

RIVAL CALIBURN PRINTED PART SET

12/08/18



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/RCaliburnAssembly.pdf>

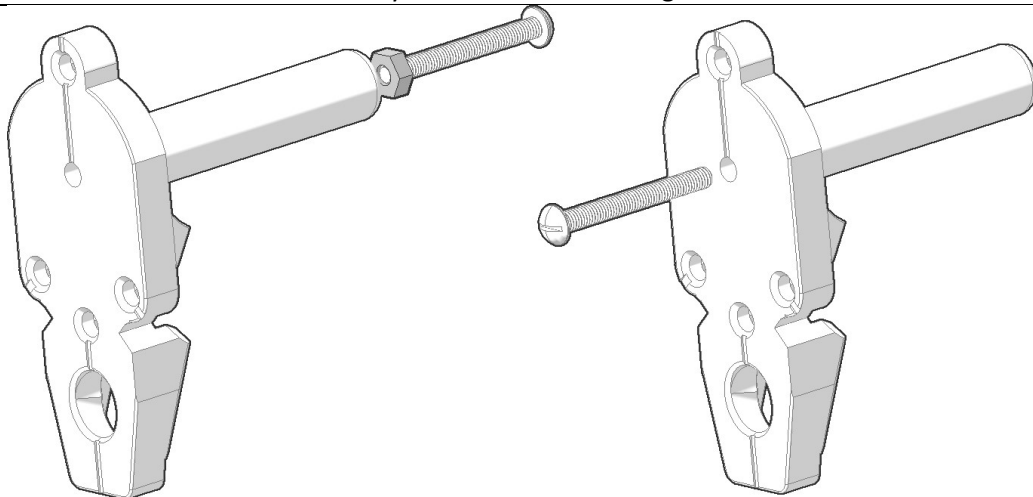
Item #	Quantity	Part Name	Infill %
60	1	Rail	20
10	1	Sear	100
15	1	TriggerAlt	20
71	1	RMagRelease	20
72	1	RForegrip	20
7T	1	TrenchR	20
40	1	Grip5	20
41	1	Tguard5	20
74	1	RMuzzle	20
43	1	PlungerE	20
75	1	Rern2R	20
45	1	BackButtR	20

77	1	RHopT	20
79	1	RTooth4	20
7U	1	RivalUpper3	20
51	1	FrontButt8	20
7L	1	RivalLower	20
53	1	ButtplateR	20
64	1	MilanCouplerAlt	20
63	1	Stock_Kiri2	20

OPTIONS

	Railgasm	RMAX
	AFG	AyyFG
	Ayy LMAO	
	Grip Insert	
	Stock Upgrade	
	Iron Sights	

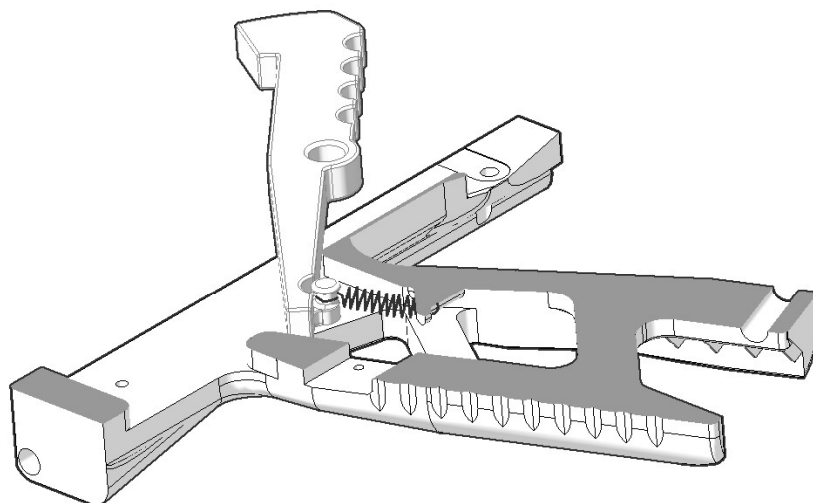
Above is a list of every printed part needed to assemble this blaster. The majority of the through holes should print to the required tolerance, but you will likely have one or two that may require minimal filing. Also make sure to trim off any burrs or oversized edges.



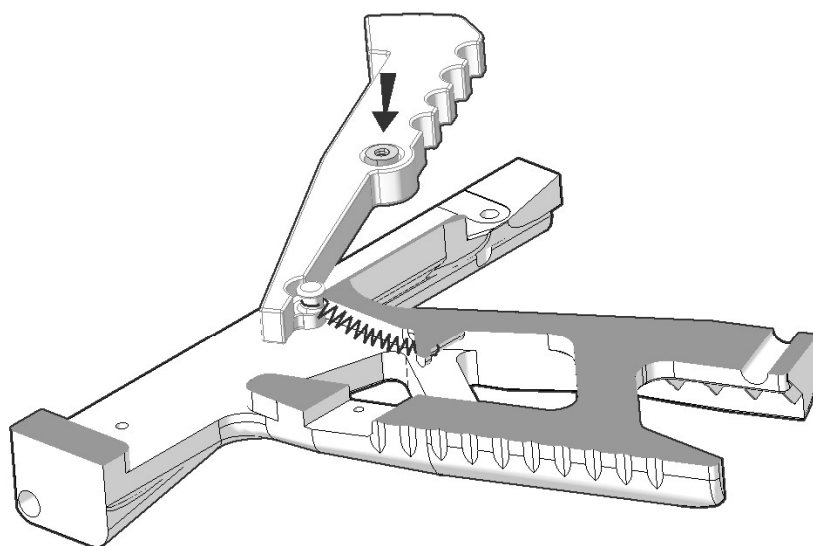
Place a hex nut onto the end of a 1-3/4" length screw, then push the hex nut into the front of the spring guide of BackButt until it bottoms out. Unscrew the long screw from the hex nut.

Insert the long screw in from the back of BackButt and screw it into the hex nut until tight.

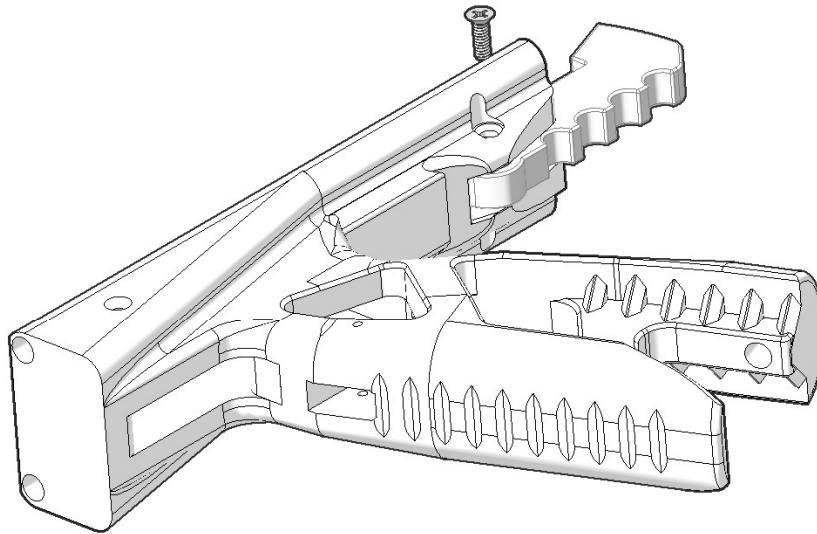
Set this assembly aside.



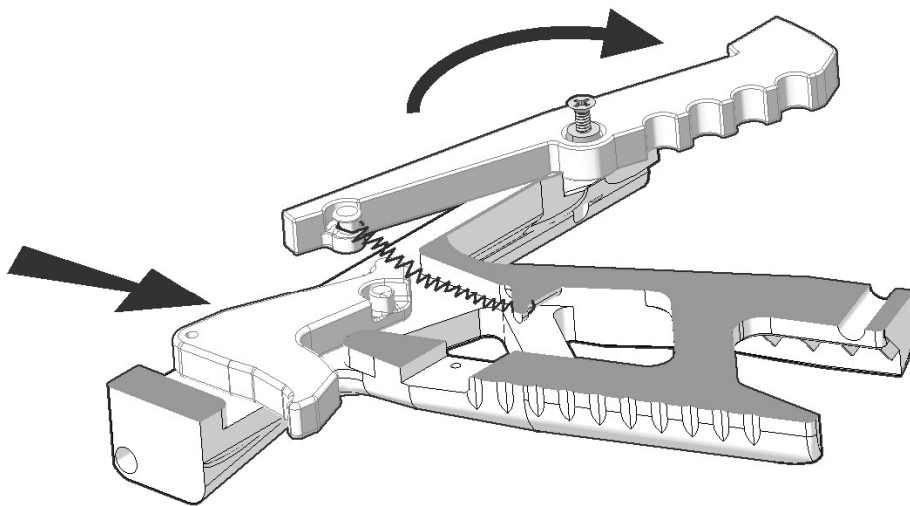
Add an extension spring to the peg on SEAR and use SEAR to fish the extension spring into the grip. Push the loop of the extension spring onto the hook inside of the grip.



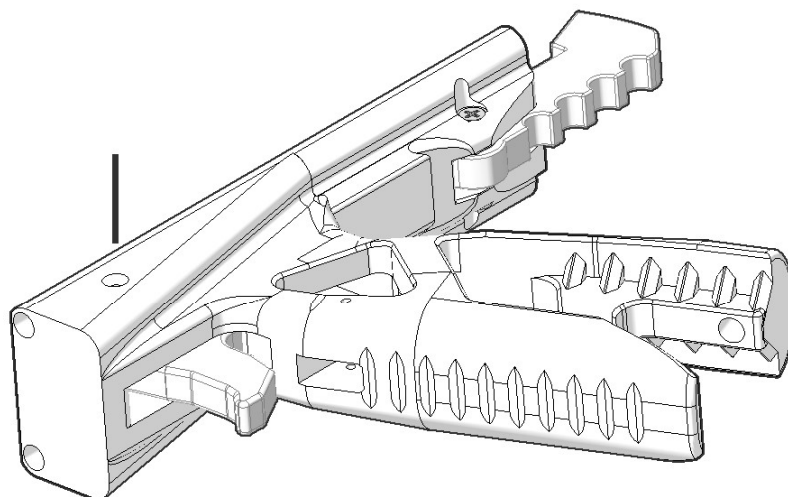
Insert the 4-40 standoff into the center hole of the SEAR and pivot it down towards the back of the grip.



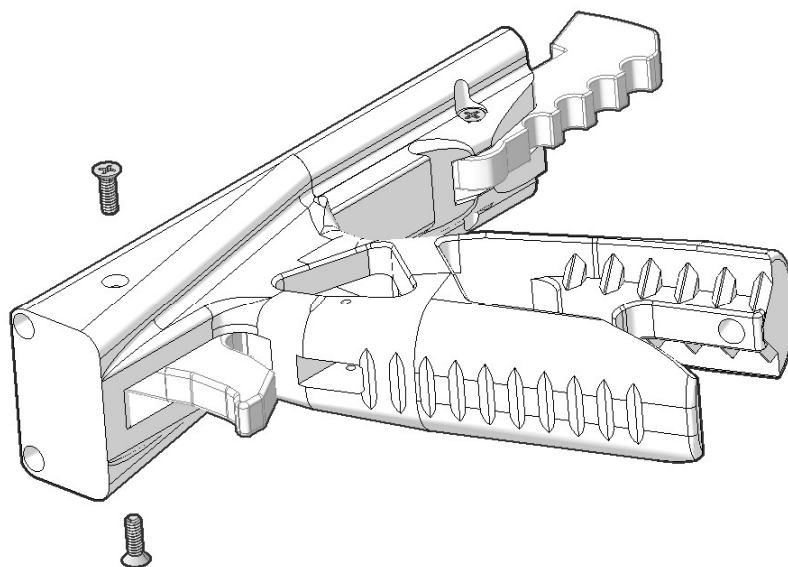
Use two short 4-40 screws to secure the standoff to the back of the grip.



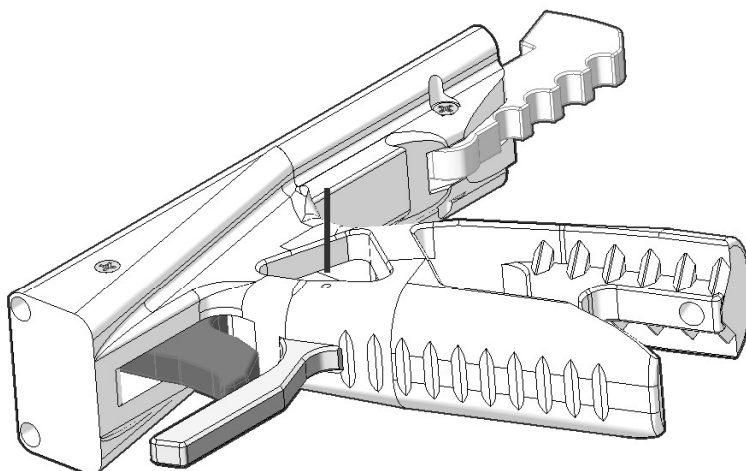
Fish the TRIGGER in through the front of the grip. You may need to pivot the SEAR back in order to get the TRIGGER in place. Once in place, the bump on the back of TRIGGER needs to sit underneath the front lip of the SEAR.



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.

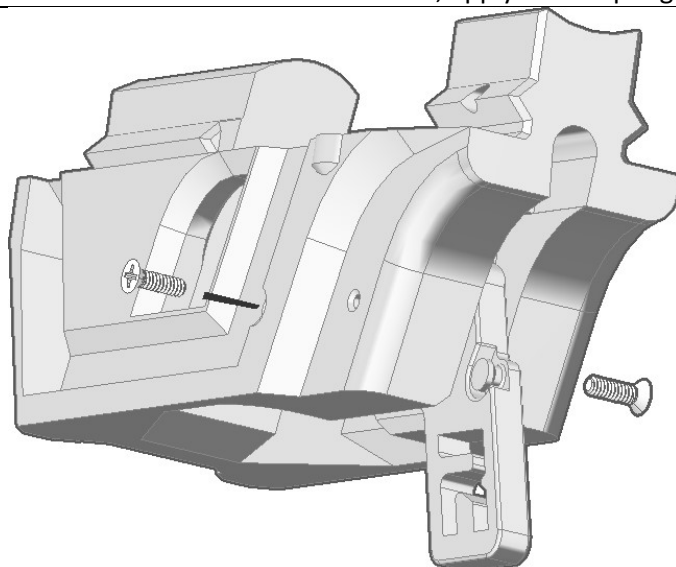


You can use a 4-40 short screw on each side of the grip to retain the Short Pin for the trigger.

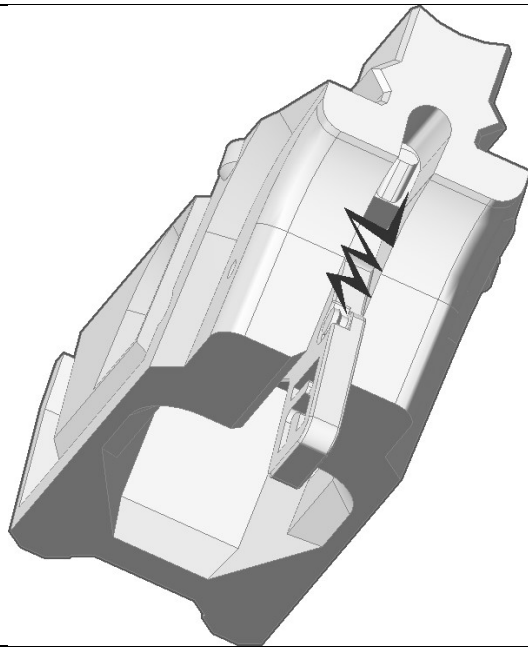


Slide the Tguard piece into the slot in the front of the Grip.

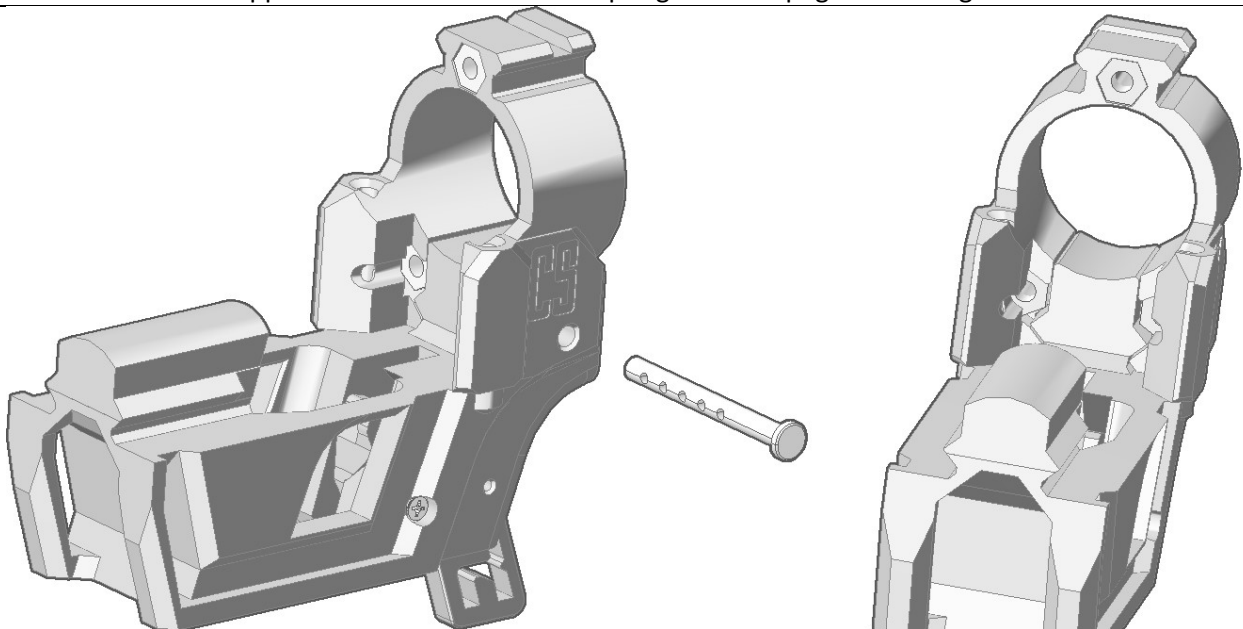
If Tguard7 and Grip5t were the parts printed, drive a 4-40 screw in from each side to secure the parts together. For the older file revisions insert another short pin into the grip and through the TGUARD piece to secure it. Tap it into place lightly with a hammer if needed. If the fit was too loose, apply from super glue and set it aside to dry.



Check the hole in MagReleaseR for obstructions or burrs and remove them if present. Line up the hole in it with the indicated hole in the RivalLower. Insert a Short Pin through the RivalLower and into the MagReleaseR. 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 RivalLower.

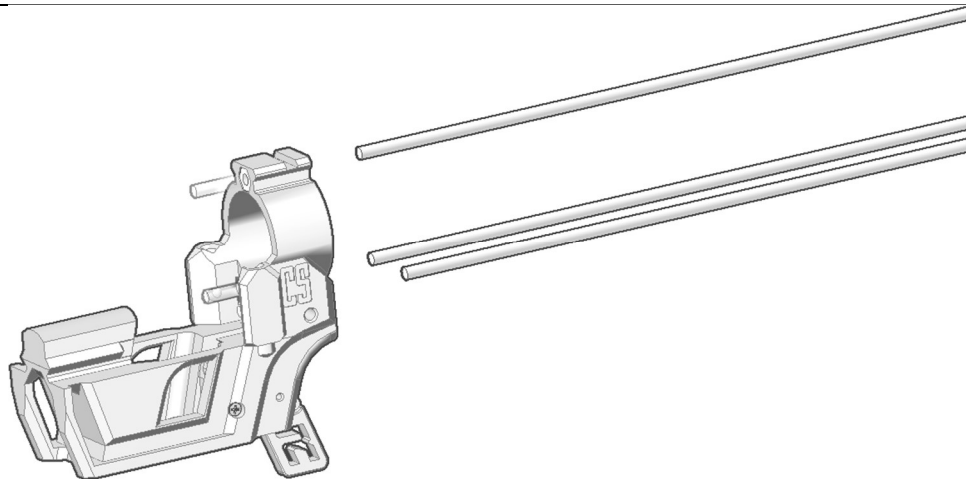


Make sure that the MagReleaseR can rotate freely on the Short Pin. If it cannot, back one of the 4-40 screws out a little until it does. Hook one end of an extension spring onto the printed hook inside the back of the RivalLower. Hook the opposite end of the extension spring onto the peg on the MagRelease.

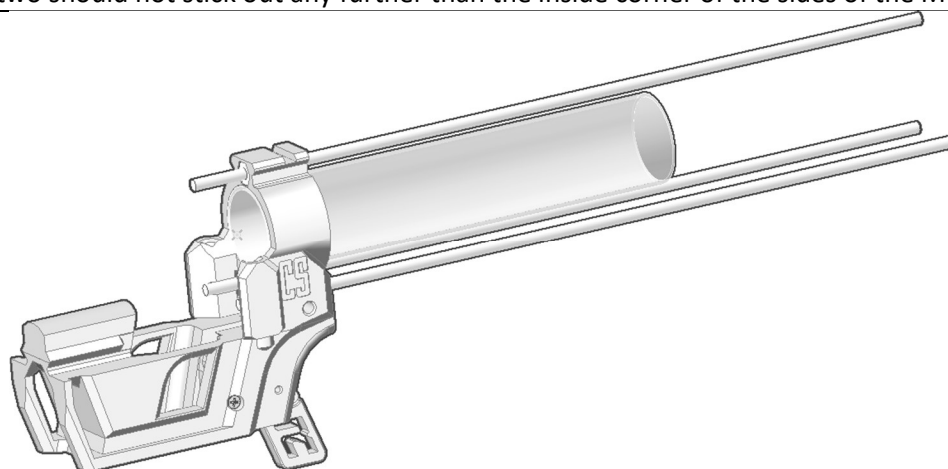


Slide the Milan Coupler onto the back of the RivalLower. Check the fit of a TakeDown pin in the holes for both. If it won't go through, clean out the hole with a 3/16" drill bit. Make sure to drill all of the way through. Drive the takedown pin in through both parts by hand. It should not be a loose fit, but it also should not require a hammer to be installed.

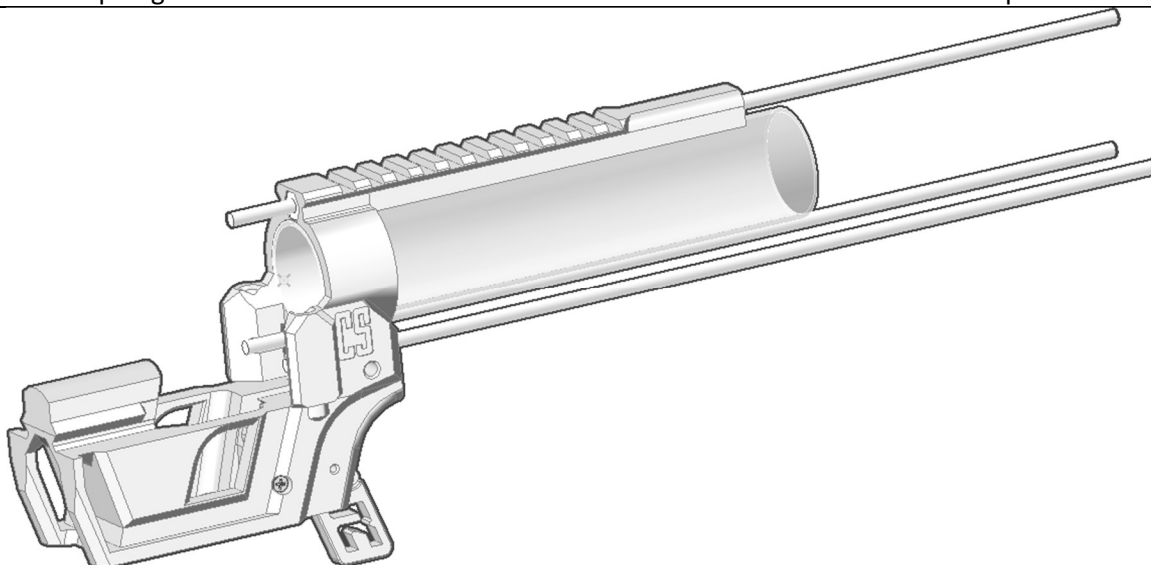
Insert a hex nut into each of the three slots in the Milan Coupler.



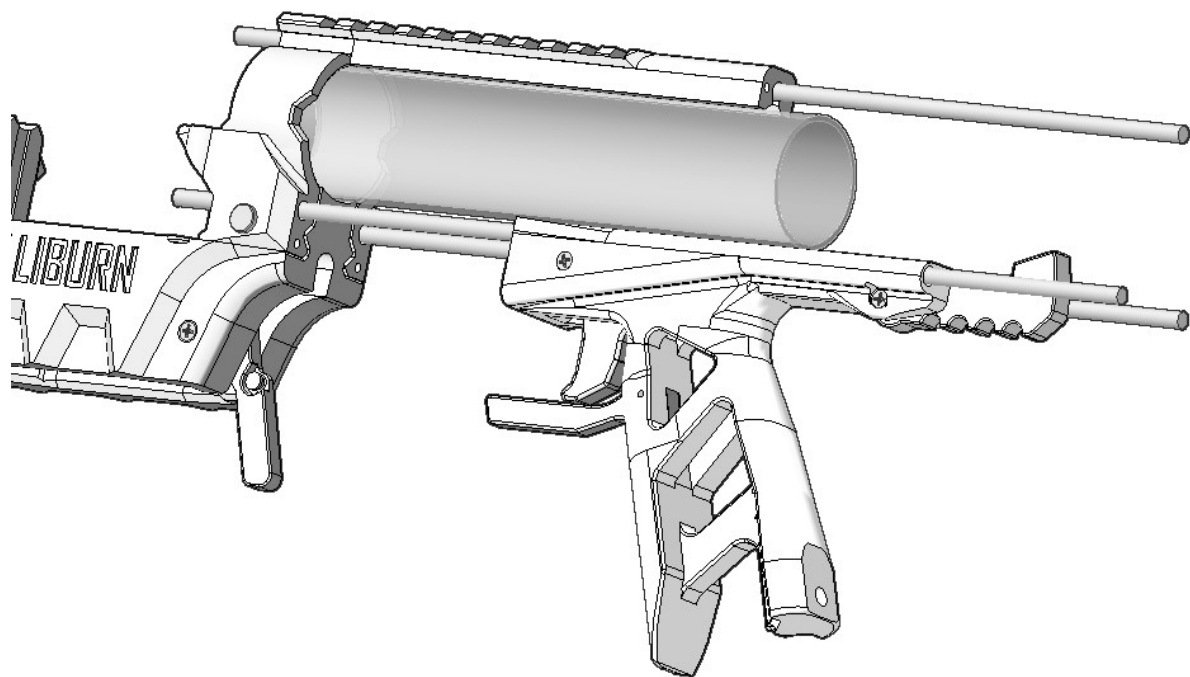
Screw a 13-inch length threaded rod into the hex nuts from the holes back of the Milan Coupler.
 Once installed the upper threaded rod should be sticking out roughly half of an inch.
 The lower two should not stick out any further than the inside corner of the sides of the Milan Coupler.



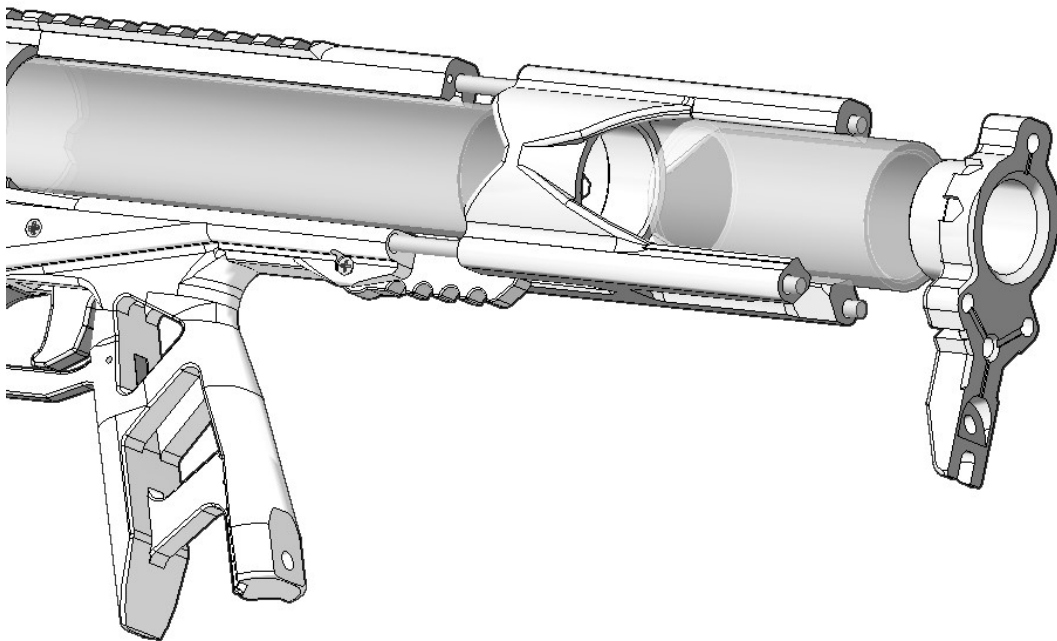
Slide the plunger tube in from the back until it is flush with the front of the Milan Coupler as shown.



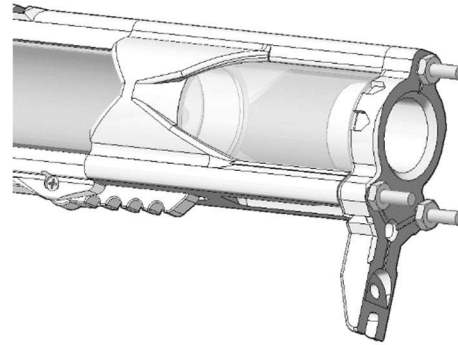
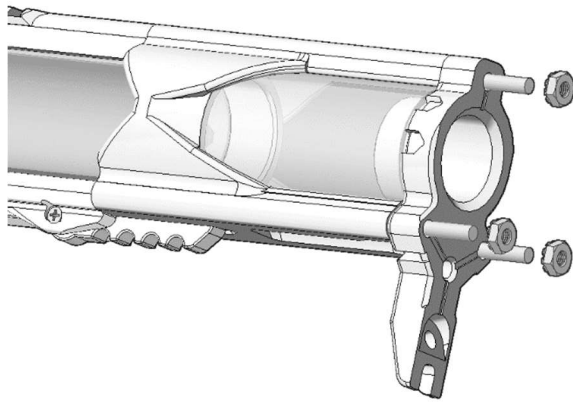
Slide the Rail piece onto the upper threaded rod from the back.



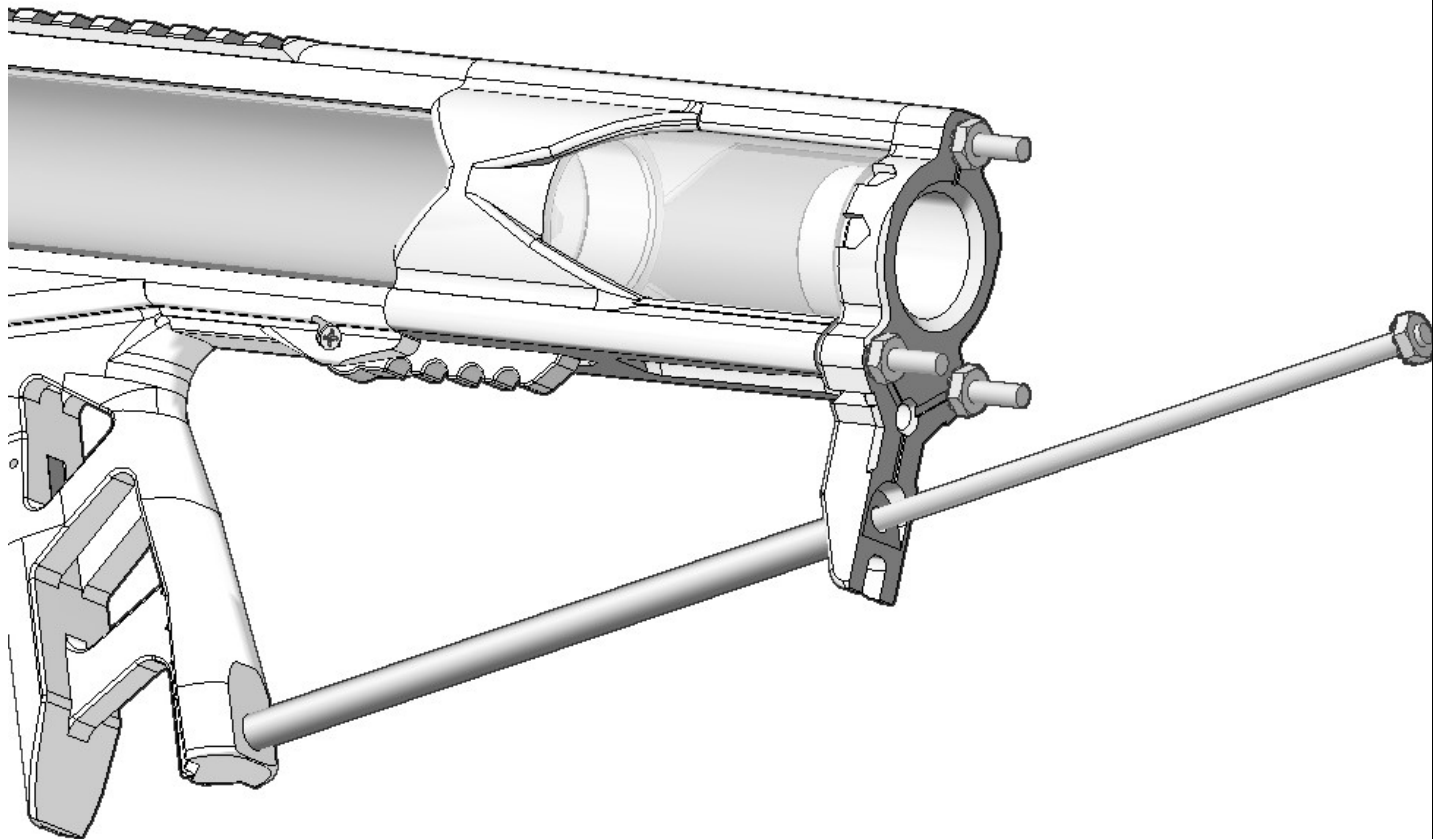
Slide the Grip assembly onto the two lower threaded rods.



Slide Stock_Kiri2 onto all three threaded rods and onto the plunger tube. It needs to bottom out against both the Rail and the Grip assembly. Insert the StockSpacer into Stock_Kiri2. Slide the FrontButt onto all three threaded rods.



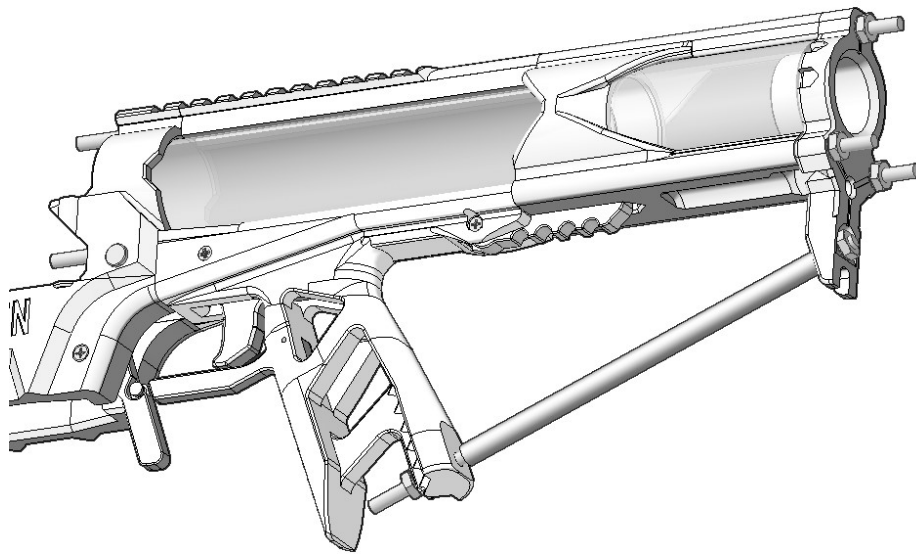
Add a hex nuts to each threaded rod and tighten by hand. Check that the front end of the plunger tube is still flush with the front face of the MilanCoupler and that the hex nuts at the front end of the threaded rods are still nested into the hex slots.



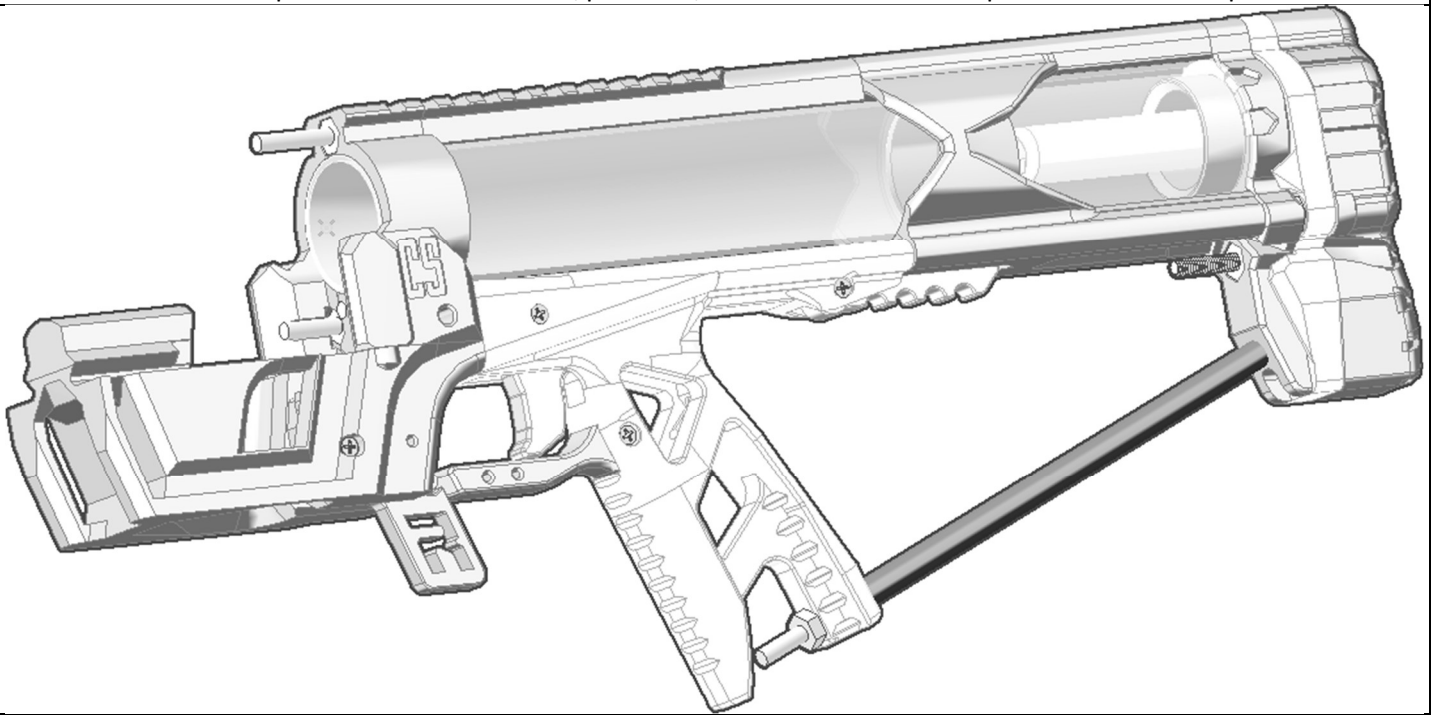
If included, slide the Grip Insert into the Grip, then wedge a Hex Nut into the slot in the underside of it.

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

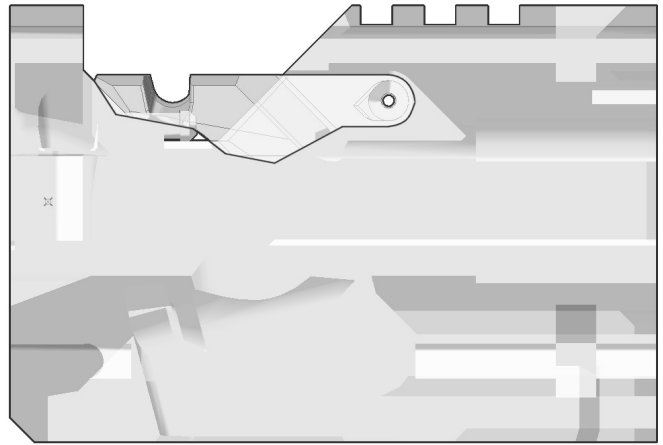
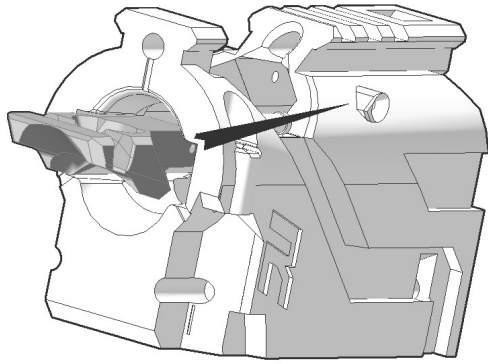
Add a Hex nut to the end of the 8-inch long threaded rod, then feed it in through the lowest hole of FrontButt, through the Stock Spacer, and through the hole in the heel of the Grip.



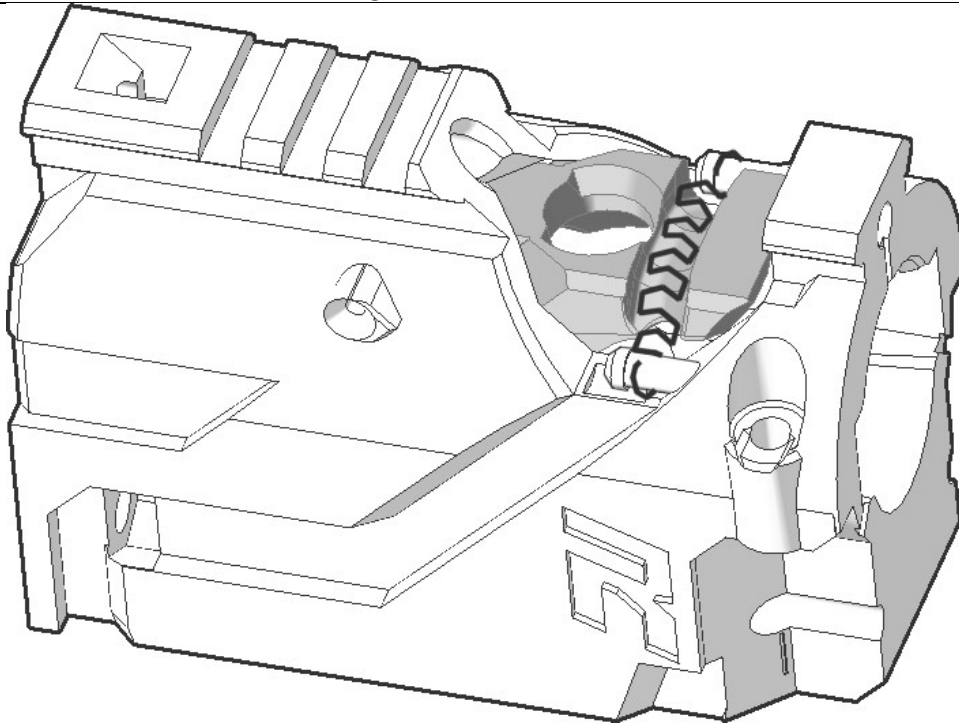
If the Grip Insert was not included/purchase, add a Hex nut to the exposed end in the Grip.



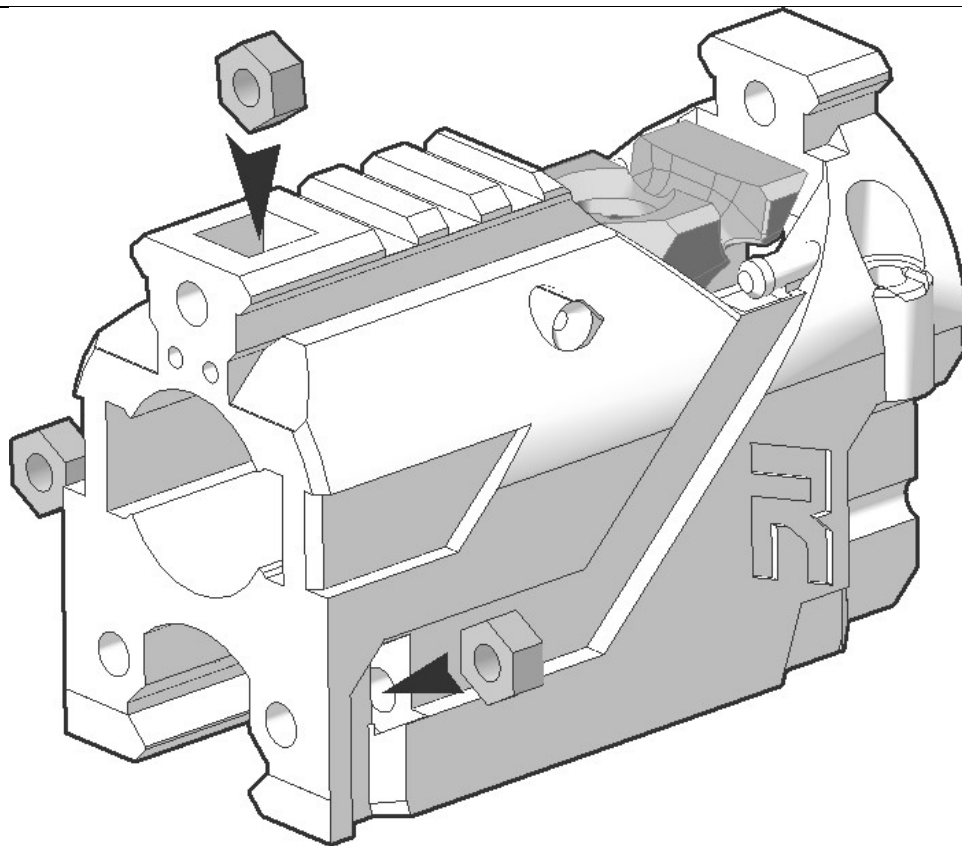
The Rear Assembly is now complete.



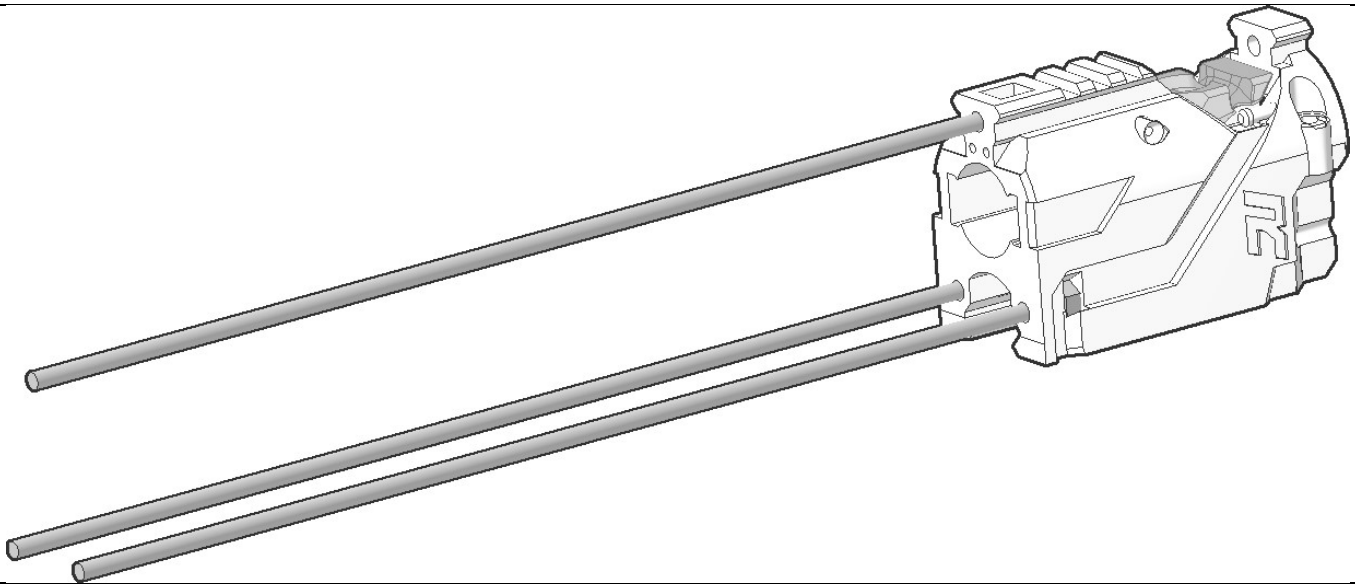
Feed RTooth4 in through the back opening of RivalUpper until it lines up with the through holes in each side. Insert or drive a short pin into RTooth4 until it's centered. If needed, plug the holes on both sides of RivalUpper by driving a 4-40 screw into them.



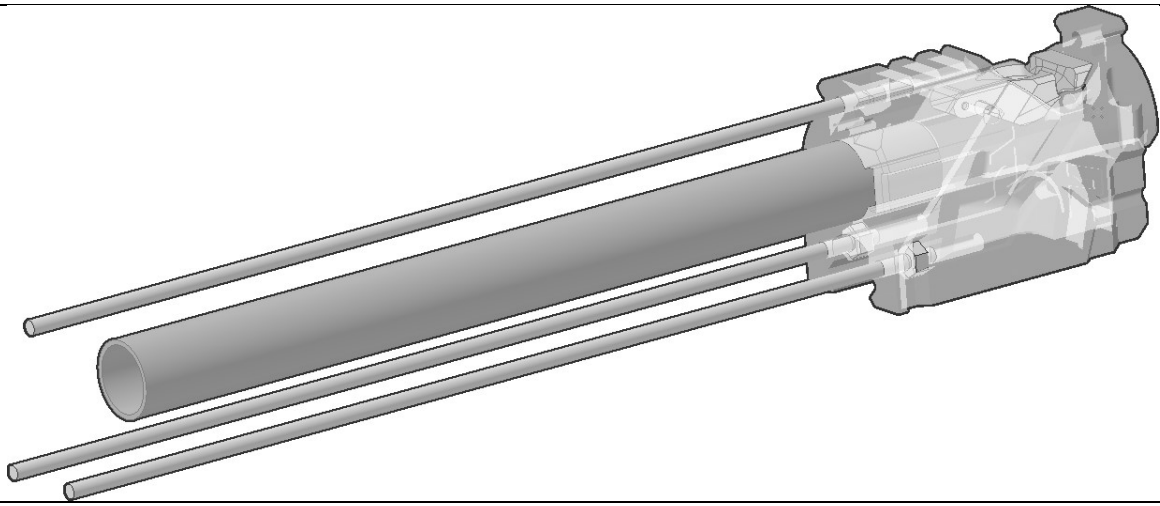
Feed a loop of an extension spring over one of the pegs on the top of the RivalUpper. Wrap the extension spring over the RTooth4 part, then pull the remaining loop over the peg on the other side of the top of RivalUpper.



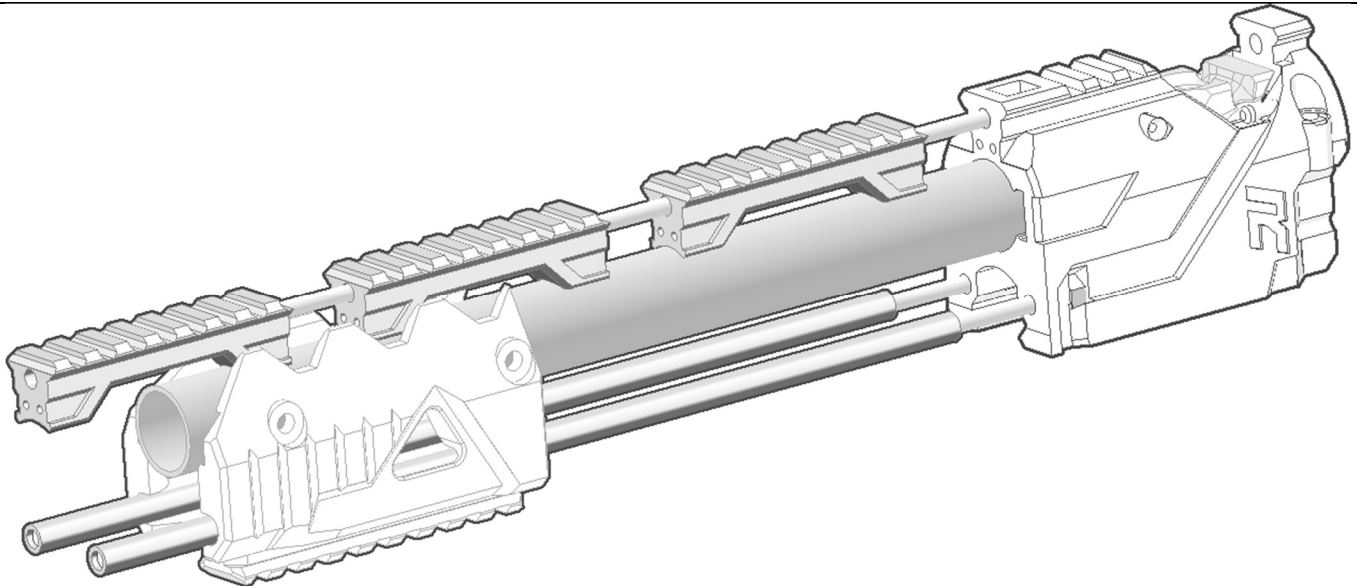
Use a Needle File to clean out the three holes at the front of the EliteUpper. Also use it to clean any loose strands from the inside of the hex nut slots. Then slide a hex nut into each slot.



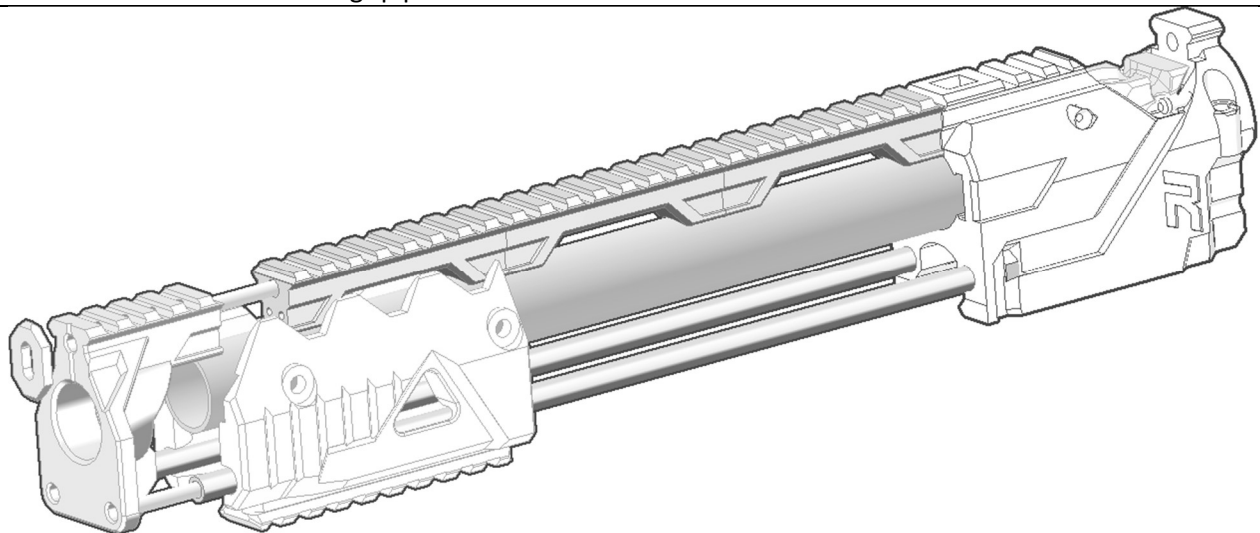
Screw a threaded rod into each hex nut until roughly a quarter inch of threaded rod is beyond the opposite side of each hex nut.



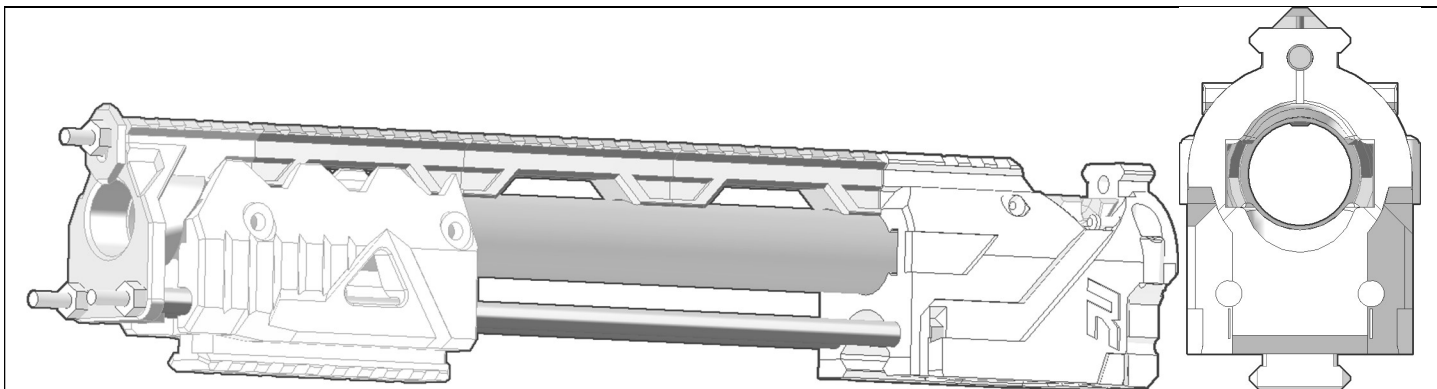
Slide the barrel into the front of the RivalUpper print until it bottoms out against the shoulder inside of it.



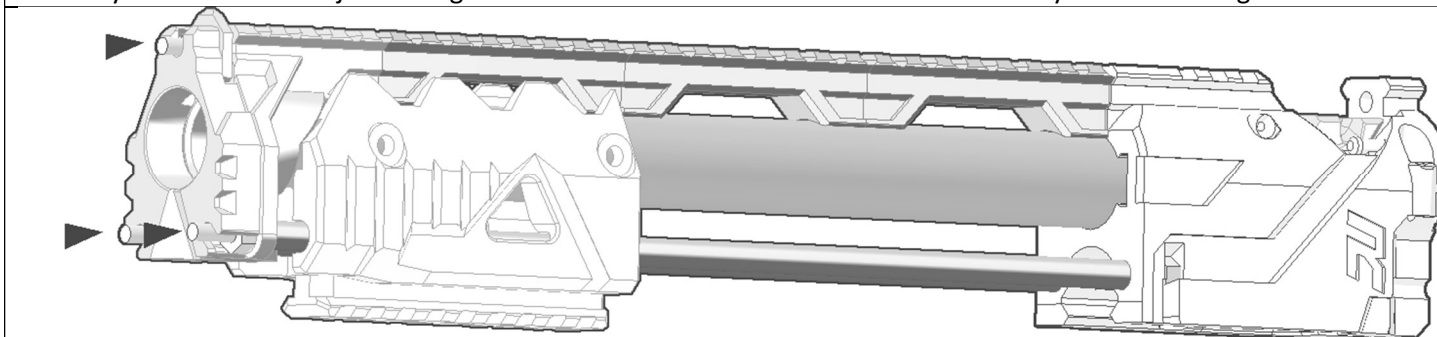
Slide the 11-1/4" lengths of plastic tubing onto the lower threaded rods.
 Slide the RailR prints onto the upper threaded rod (or the remaining 11-1/4" length of plastic tubing)
 Slide the RForegrip print onto the lower threaded rods and around the barrel.



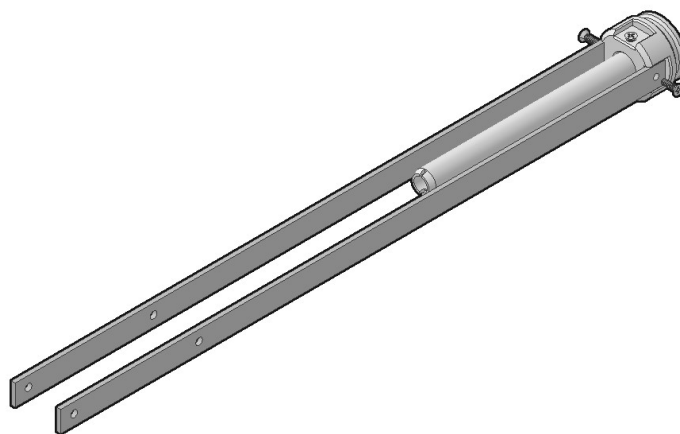
Slide the RMuzzle onto the exposed threaded rods.
 Slide the RHopT print onto the upper threaded rod so that the printed rib in the middle of the part is facing backwards.



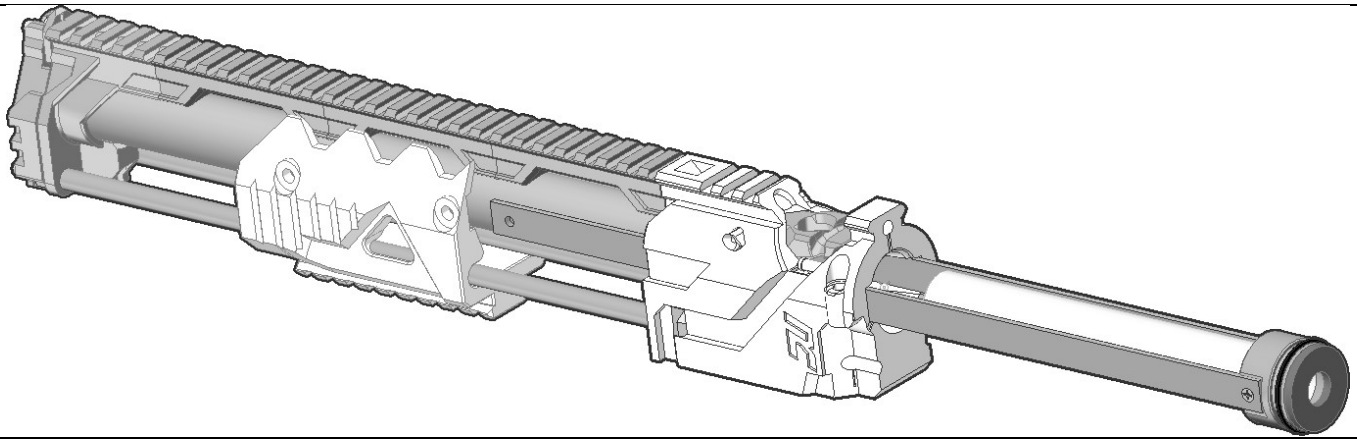
Add a hex nut to each threaded rod and tighten them against the RHopT and Muzzle parts.
View the assembly from the back and confirm that the inside of the barrel is in alignment with the Magwell. If it is not you will need to adjust the tightness of the hex nuts at the front of the assembly until it is in alignment.



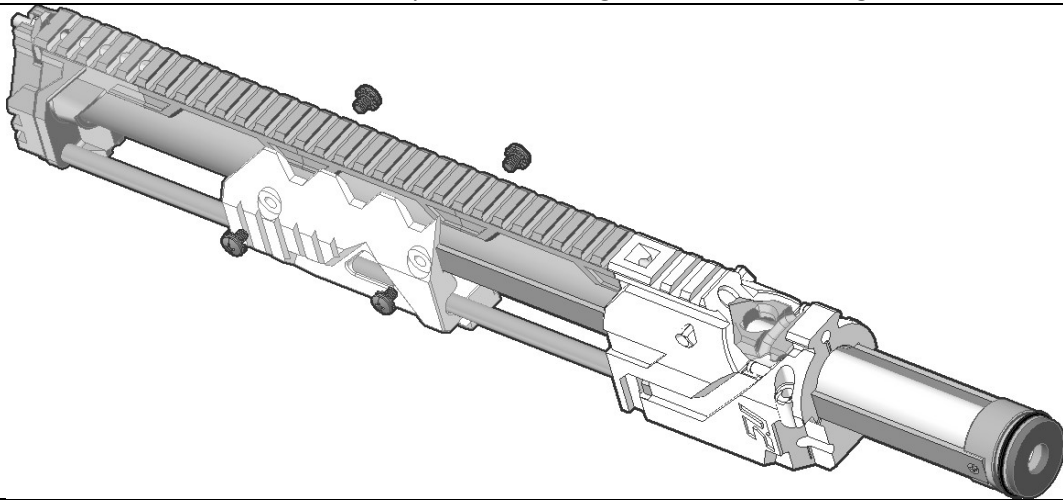
Align all of the hex nuts so their sides are parallel with each other and the sides of the muzzle piece. Slide the "Trench" over the barrel and onto the hex nuts until they are encapsulated by it.
Add a hex nut to the end of each available threaded rod and tighten against the Muzzle Cap.



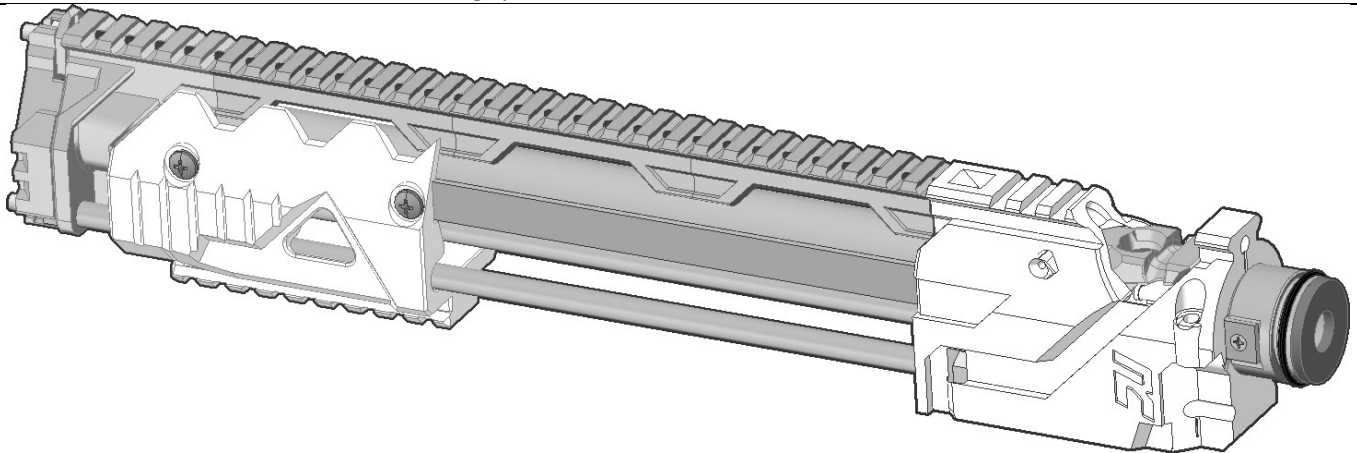
Secure the Bolt Arms to the ramrod with two 4-40 screws. DO NOT OVERTIGHTEN



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



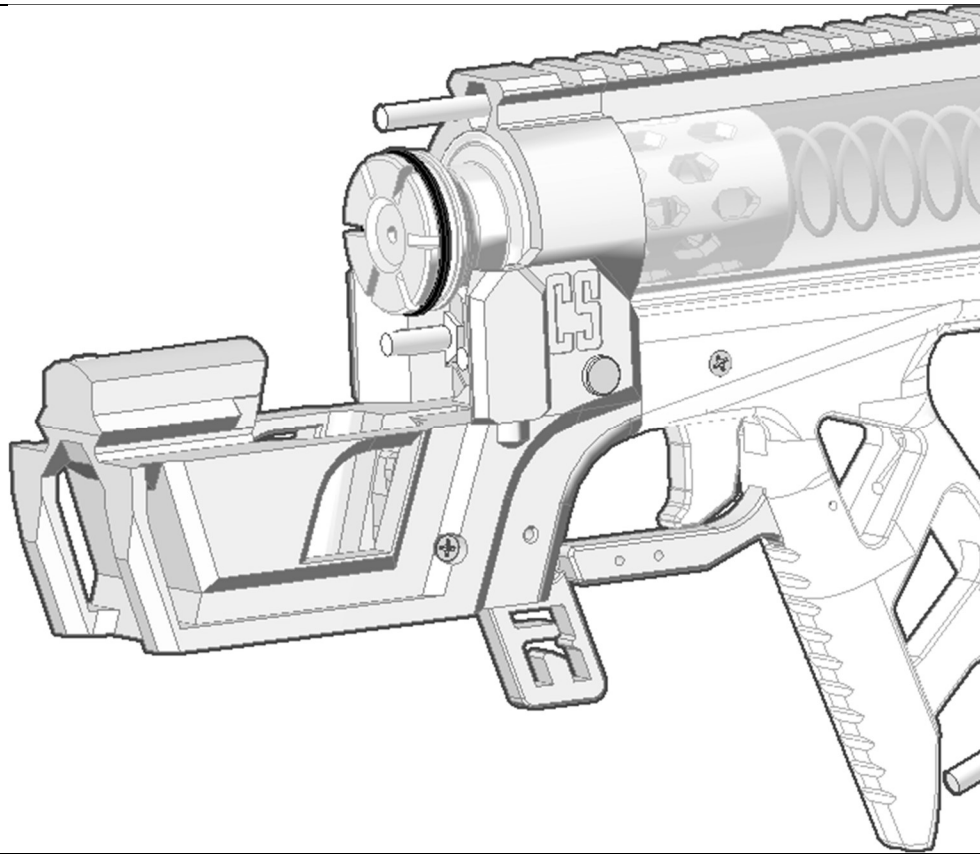
Slide the Foregrip back over the aluminum straps (Bolt Arms) until the threaded holes line up with the holes in the Foregrip. Secure them together at the rear pair of holes using two short 10-32 screws. Secure the front half of the Foregrip with two more short 10-32 screws.



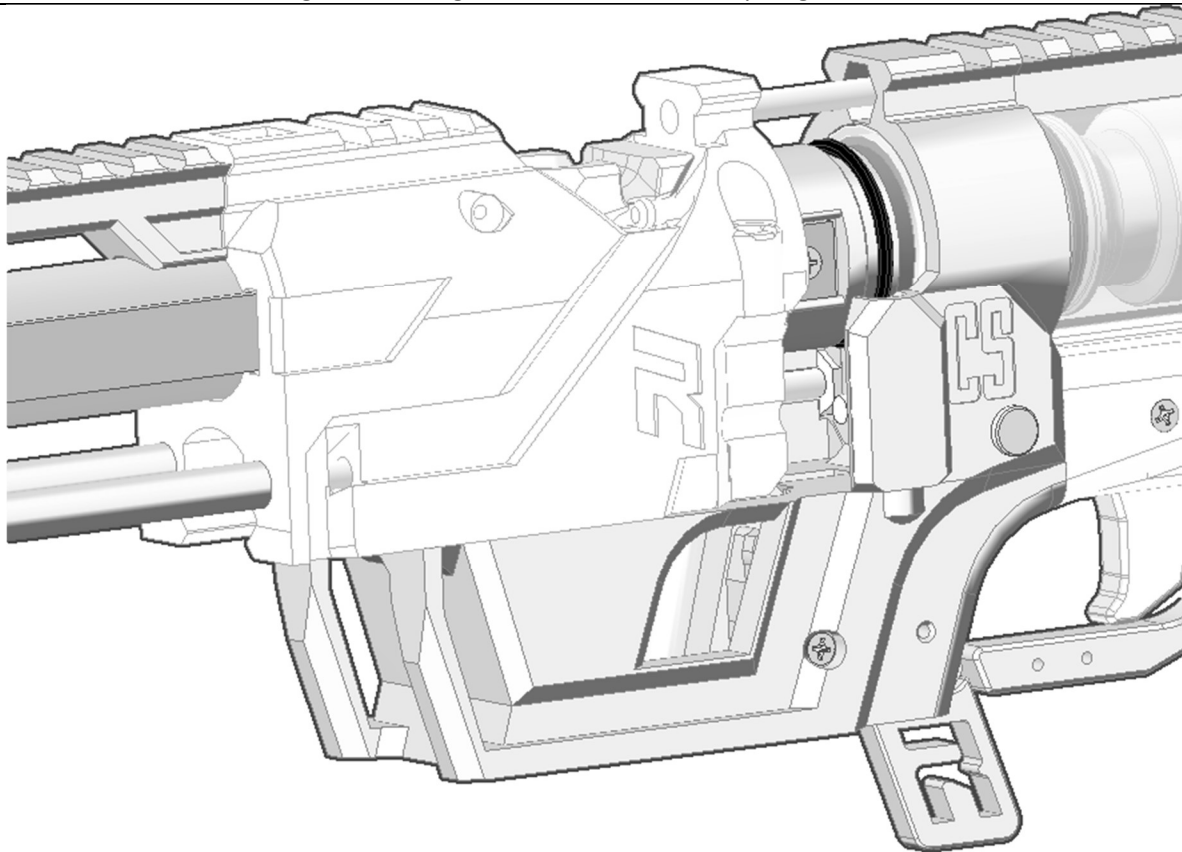
Then slide the Foregrip forward and make sure the the Ramrod is entering the Barrel during this action. If it isn't doing so smoothly double-check its alignment and try again.

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.

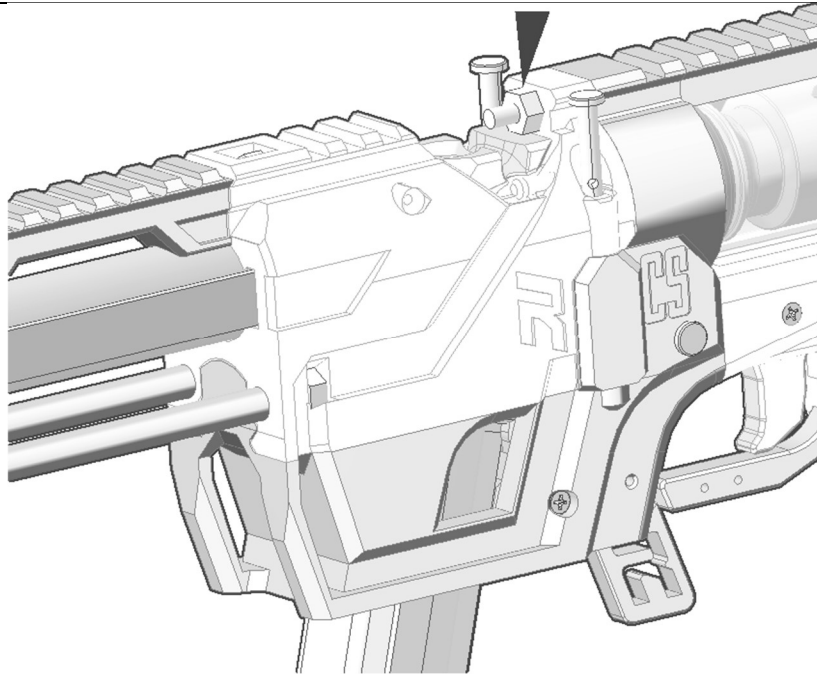
The assembly of the Front-Half of the Elite blaster is now complete.



Add a 123 O-Ring to the Plunger then slide it into the plunger tube from the front.



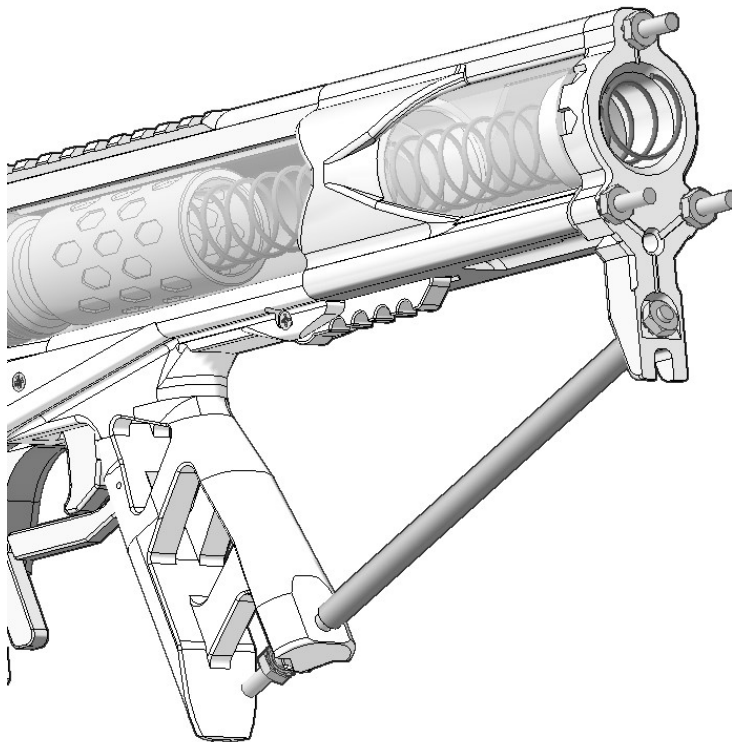
Slide the Front-Half onto the RivalLower from above. Use the foregrip to push the base of the Ramrod into the Plunger Tube. You may need to push the o-ring into the plunger tube in one or two spots if it gets stuck. Slide the Front-Half assembly back onto the threaded rod ends and bottom it out against the MilanCoupler.



Push a Takedown pin into through the top of the RivalUpper and through the Tabs of the Milan Coupler. The heads of the pins should bottom out into the RivalUpper.

If the pins do not want to insert all the way, you may need to touch up the holes in all of the associated parts with a 3/16" drill bit run SLOWLY with a power drill, or by hand, or with a small round needle file.

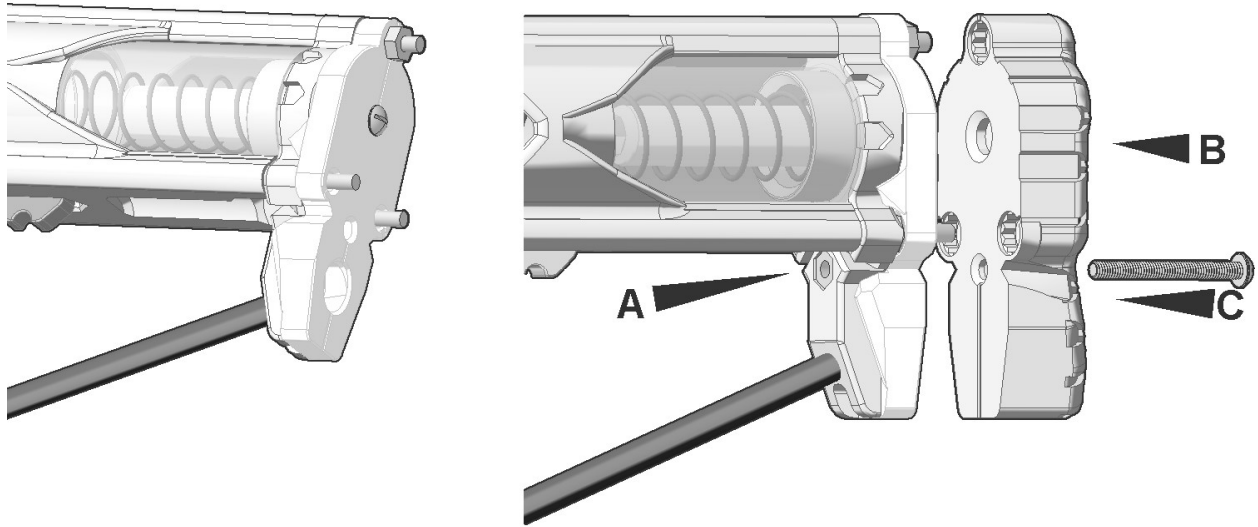
Then add a hex nut to the exposed upper threaded rod and tighten it.



Use a 3/8" Combination wrench to tighten the hex nuts at the back of the stock. Look down the top of the blaster and confirm that the assembly is straight. Adjust the tightness of the hex nuts until the entire blaster is straight.

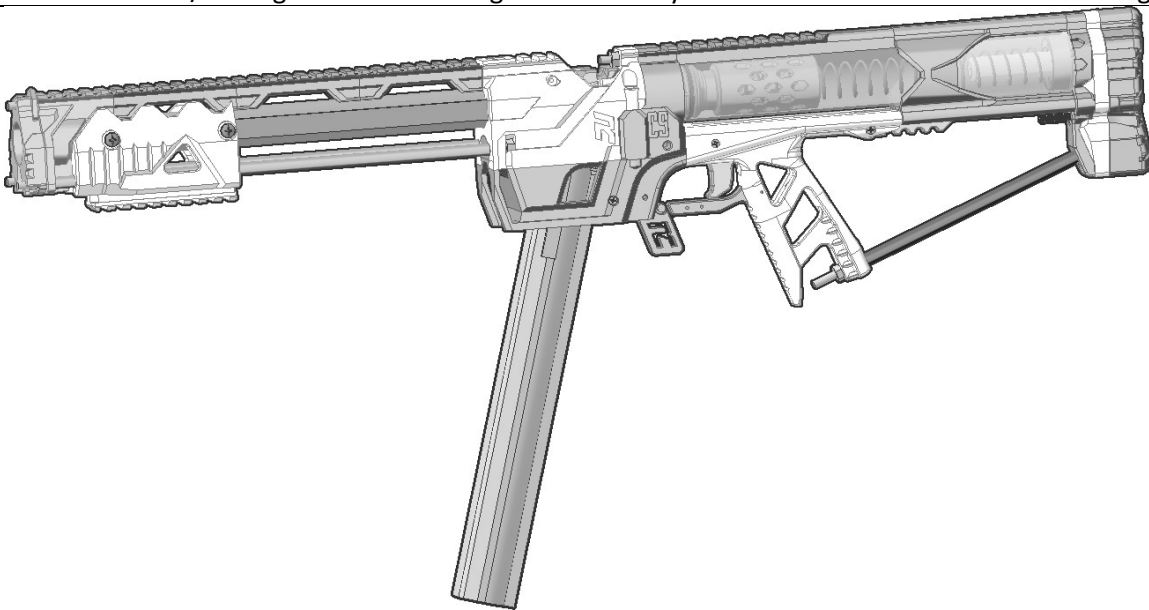
Align all of the hex nuts so their sides are parallel with each other and the sides of the muzzle piece.

Slide a Main Spring of your choice in through the back of the Stock.



Slide the Butt Assembly onto the end of the stock until it encapsulates the hex nuts. Add a hex nut to the upper threaded rod to secure it.

- A. Add a Hex Nut to the socket at the front of FrontButt
- B. Push the Buttplate onto the backside of BackButt until it encapsulated the upper hex nut.
- C. Feed a 1-3/4" length screw in through the assembly and screw it into the hex nut A until tight.



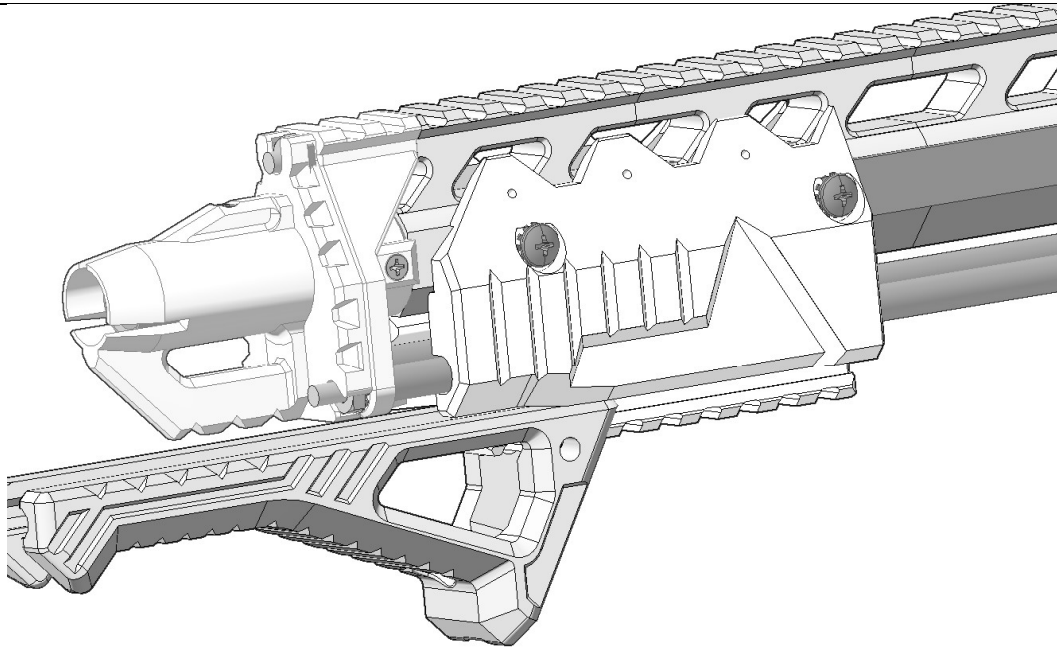
Slide the foregrip back to compress the mainspring until the plunger gets engaged on the Sear.

Insert a Magazine loaded with Rival Rounds. Slide the foregrip all the way forwards to chamber the Rival Round in the top of the Magazine. You can load up to three HIRs 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 Rival Round loaded in the barrel and need to pull the Trigger to de-prime the blaster, do so with the breech completely OPEN while firmly grasping the foregrip. Hold the trigger down, then slowly close the breech by moving the foregrip forwards.

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.

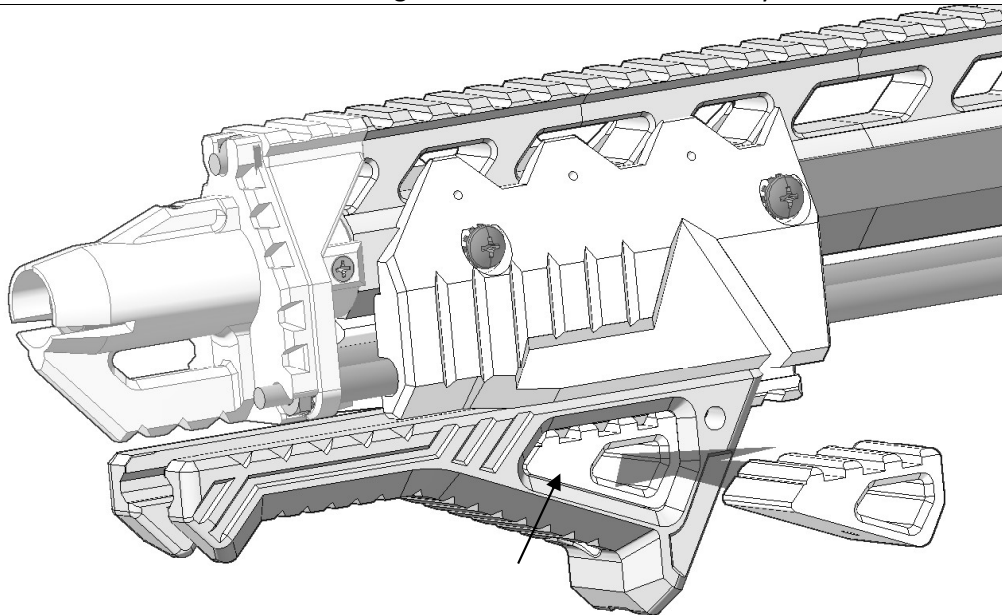
The Blaster and Hardware Kits are shipped with a K25 spring. The alternate spring options are the 788 and K25 which have to be purchased separately or opted for as a replacement.

ADDENDUM: Installation of Accessories



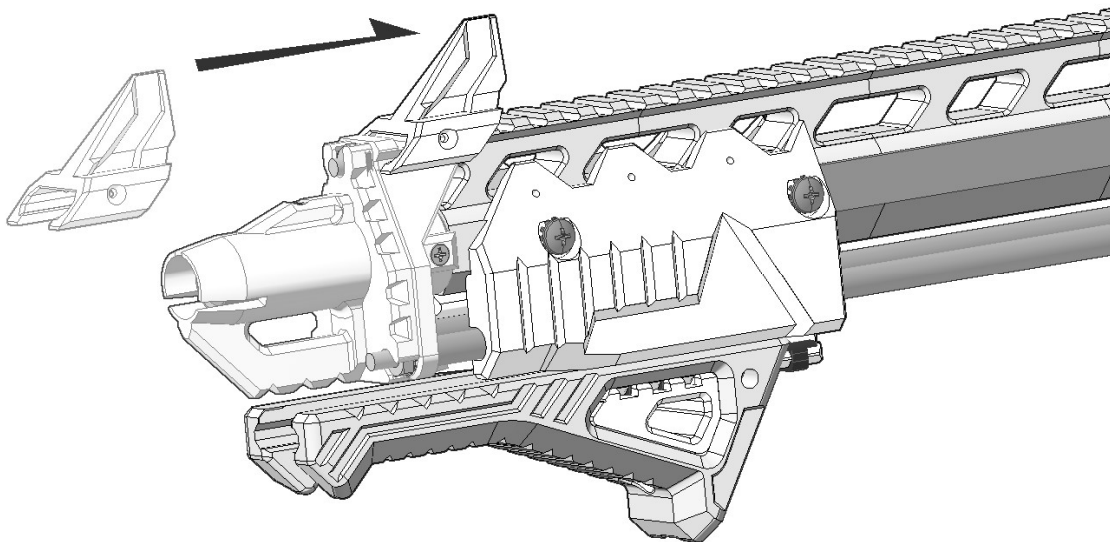
If you printed the Angled Foregrip yourself there are likely to be some spots inside the cutout that need to be touched up with a round needle file. Check the fit of the “Core” piece through it and file out any spots that obstruct it from doing so.

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.



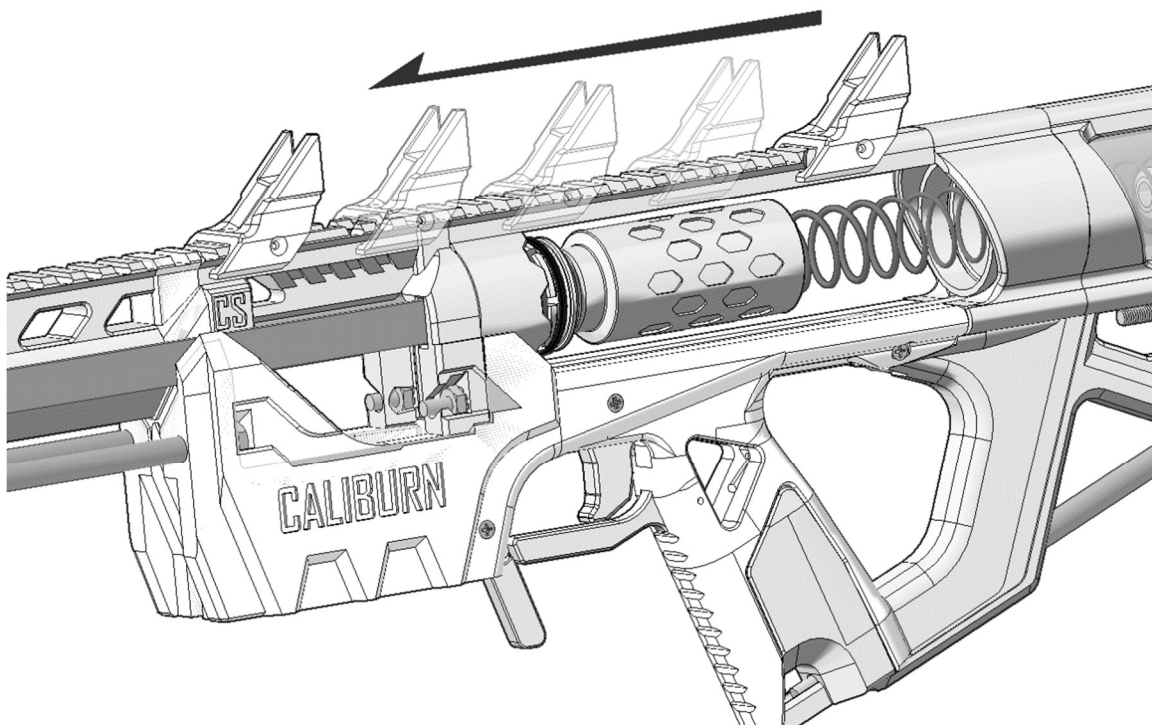
Slide the core piece in through the cutout. You will need to adjust the location of the Angled Foregrip on the rail until the segments on the Core piece line up with them. If needed, use a hammer to tap the core piece into position until it is centered.

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.