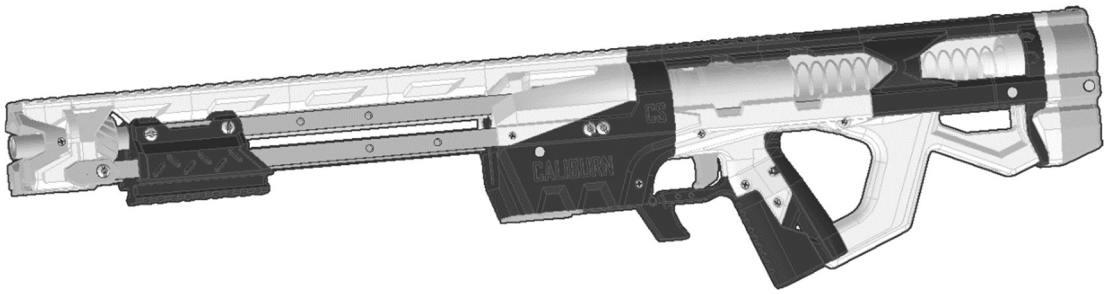
CALIBURN 4 ASSEMBLY INSTRUCTIONS

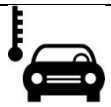


The Caliburn 4 is a Mag-Fed Pump-Action Homemade Nerf Blaster design released as a Non-Commercial license file set by Captain Slug (http://www.captainslug.com).

You are welcome to and encouraged to modify the files in any way you want. The Majority of the parts can be printed with infill as low as 20% in PLA, but I would recommend printing in layers of 300 Micron or smaller. It is also advisable to print with 1.5mm to 2mm walls/perimeters.

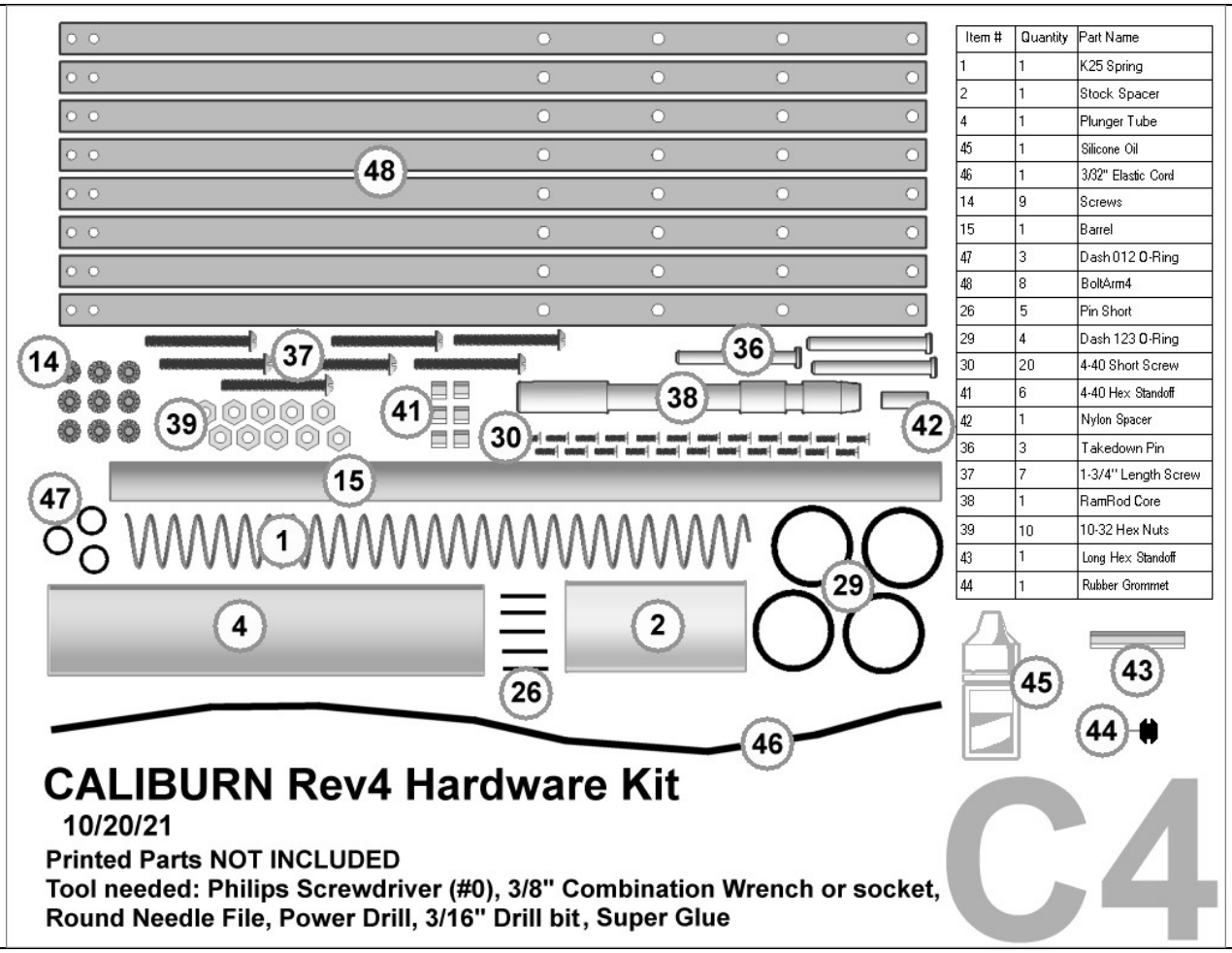
Hardware kits and Full Blasters are available for sale as made-to-order items. I'm producing these myself in what remains of my free time.

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 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.



Item #	Quantity	Part Name
1	1	K25 Spring
2	1	Stock Spacer
4	1	Plunger Tube
45	1	Silicone Oil
46	1	3/32" Elastic Cord
14	9	Screws
15	1	Barrel
47	3	Dash 012 O-Ring
48	8	BoltArm4
26	5	Pin Short
29	4	Dash 123 O-Ring
30	20	4-40 Short Screw
41	6	4-40 Hex Standoff
42	1	Nylon Spacer
36	3	Takedown Pin
37	7	1-3/4" Length Screw
38	1	RamRod Core
39	10	10-32 Hex Nuts
43	1	Long Hex Standoff
44	1	Rubber Grommet

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.

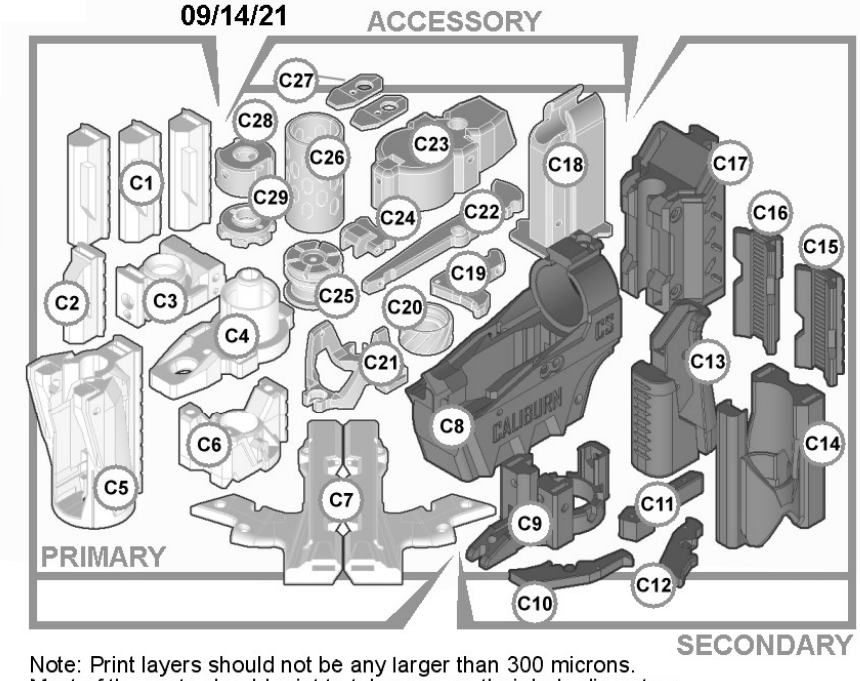
To assemble this blaster you will need a Slotted Screwdriver, Small Philips Screwdriver, 3/8 Combination Wrench, and a Round Needle File. You may also need a 3/16” drill bit and a SLOW power drill. Super glue is optional.

The hardware kit includes silicone oil for lubricating the inside of the plunger tube. 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.

Caliburn4 Part Set

09/14/21



Item #	Quantity	Part Name
C1	3	4bs
C2	1	4bsf
C3	1	4Muzz
C4	1	4BackB
C5	1	4MagUpper
C6	1	4Muzz2
C7	1	4GripPlate
C8	1	4MagLower
C9	1	4Fbutt
C10	1	4Trelease
C11	1	4Tguard
C12	1	4Nrelease
C13	1	4Gripm
C14	1	4Stock
C15	1	4Rail1
C16	1	4Rail2
C17	1	4Doom
C18	1	4MagAdapter
C19	1	4Trigger
C20	1	4Collet
C21	1	4Trench
C22	1	4Sear
C23	1	4Butt
C24	1	4GripB
C25	1	4PlungerE1
C26	1	4PlungerE2
C27	2	4Tie
C28	1	4RamB
C29	1	4RamF

Note: Print layers should not be any larger than 300 microns.
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

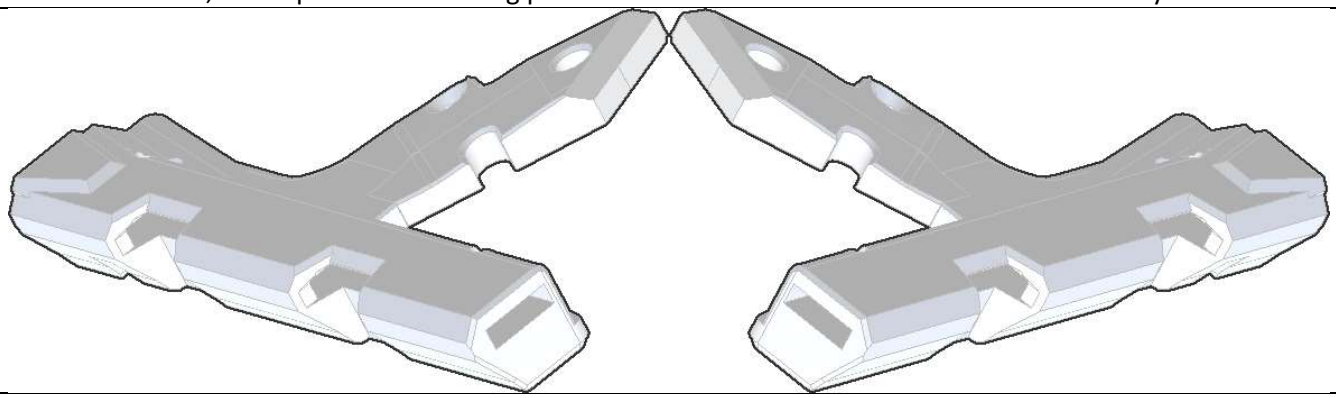
Assembly Instructions:
http://www.captainslug.com/nerf/C4Assembly1.pdf

OPTIONS

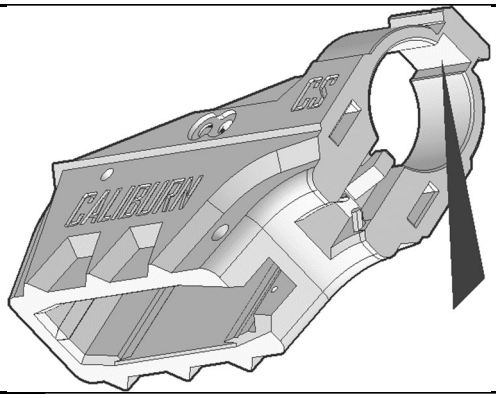
			RMAX
VFG	AFG	Pyrangle	AyyFG
		Stock Upgrade	
	SCAR	Iron Sights	
	Riser	Knuckleduster	

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.

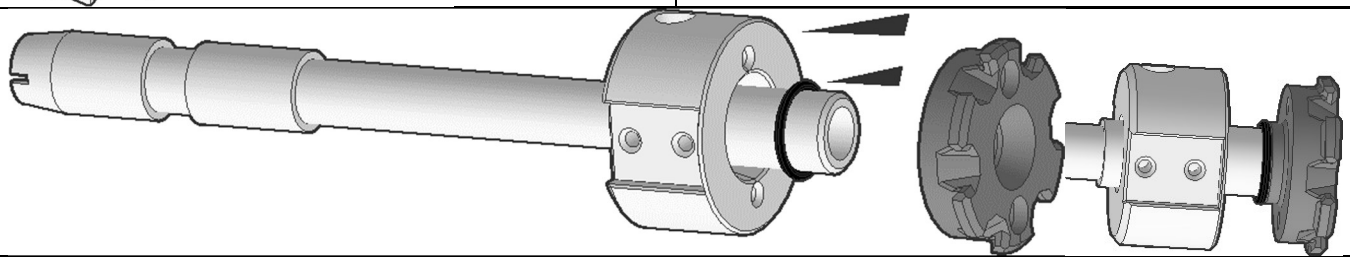
Use a sharp knife to deburr the edges of the rectangular holes in the prints shown above. Test fit the aluminum bars inside each, and repeat the deburring process if needed until the aluminum bar slides freely in each.



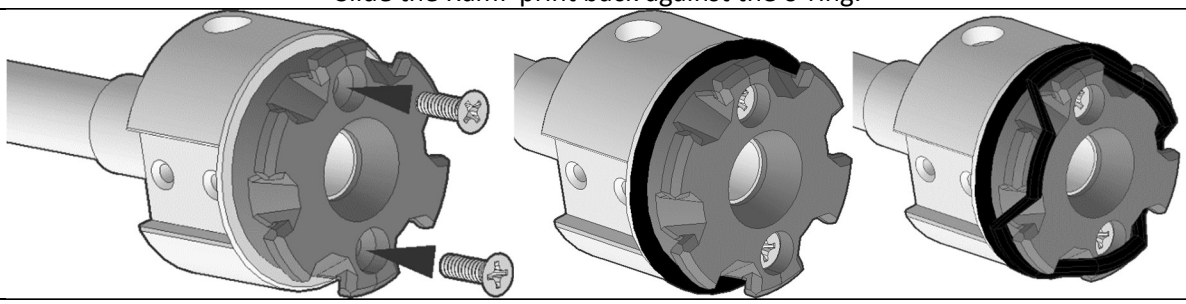
Use a small slotted screwdriver to check the inside of the rectangular slots in the grip side prints for loose or sagging printer filament strands. Test fit an aluminum bar inside each, and repeat the interior cleaning process until the aluminum bar slides freely in each.



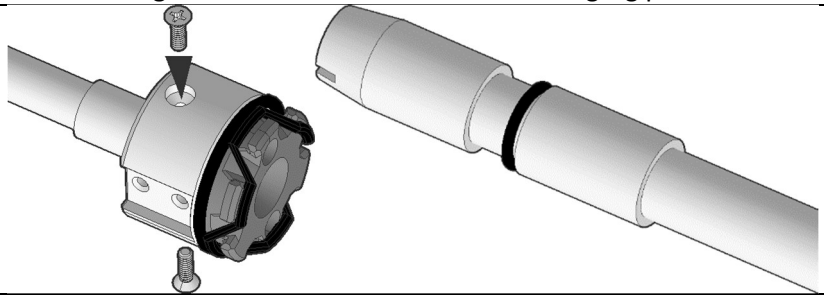
Inspect the indicated area of the Lower print for sagging filament strands. Test fit an aluminum bar inside the open rectangular slot. If obstructed by strands, use a round needle file in the indicated area to sand them down until the aluminum bar slides freely.



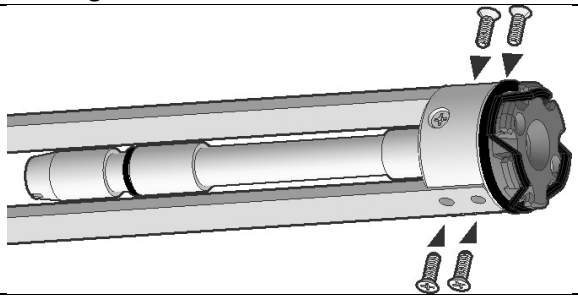
Slide the RamF print onto the back of the Ramrod Core.
Stretch a 012 O-ring onto the back of the Ramrod Core.
Slide the RamB print onto the back of the Ramrod Core until it bottoms out against it.
Push the 012 o-ring back against the lip on the RamB print.
Slide the RamF print back against the o-ring.



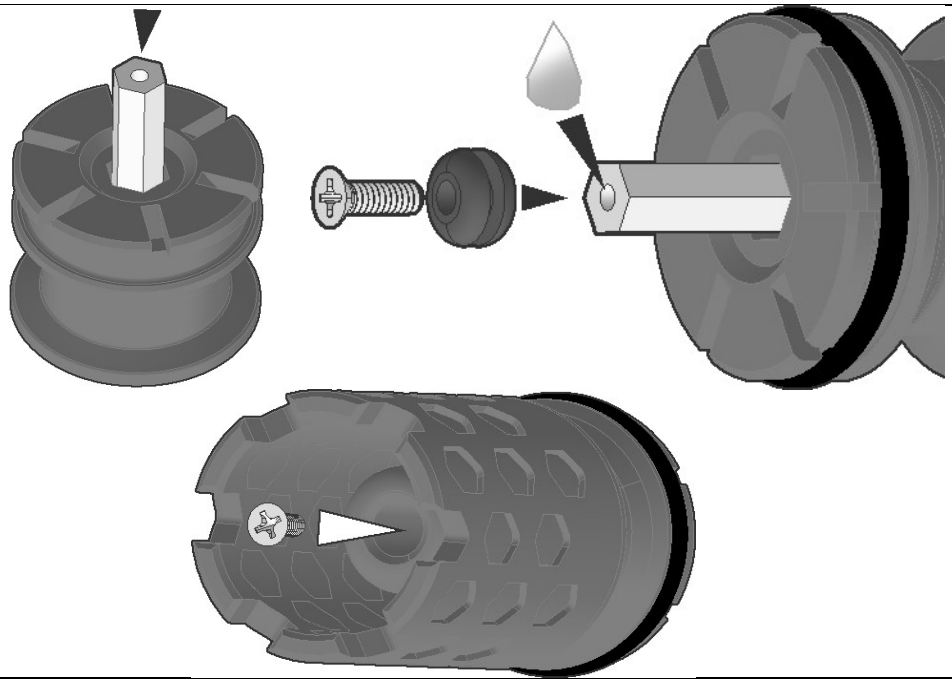
Drive two screws through the RamB print and into the RamF print until the two are clamped together.
Add a 123 O-ring to RamB. Then add a second in a zigzag pattern as shown.



Drive a screw into each side of the RamF print until it clamps against the Ramrod Core.
Add an 012 o-ring to the undercut at the front of the Ramrod Core.



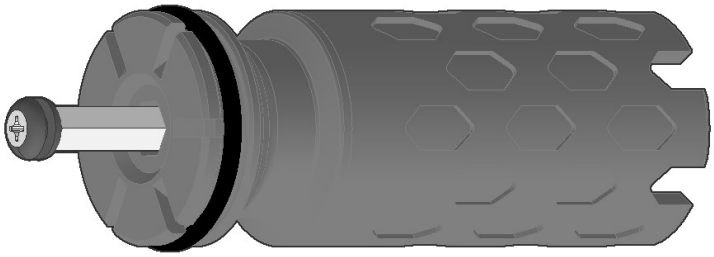
Line a BoltArm4 up to the slot in the side of the RamF print and drive two screws through the holes and into the RamF print until secure. Repeat for the opposite side.



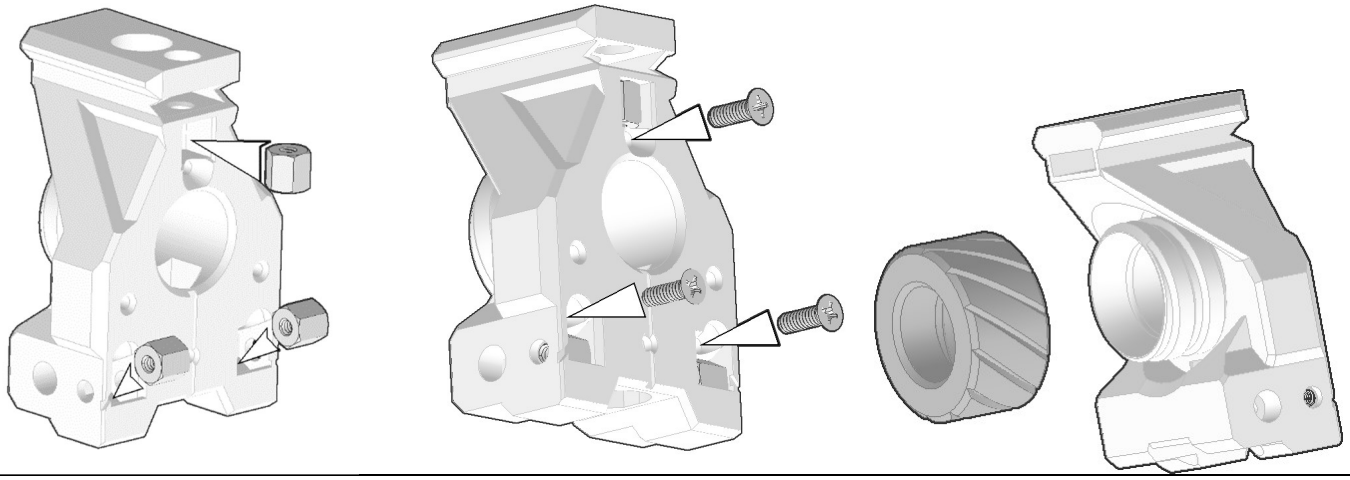
Push the long hex standoff into the front of the PlungerE1 print. You may need to use a hammer to tap it into place until it bottoms out in the socket.

To add the optional air brake feature put a drop of super glue into the thread in the exposed end of the long hex standoff. Feed a 4-40 screw through the rubber grommet, then drive it into the end of the long hex standoff until the head of the screw is flush with the top of the rubber grommet, and the bottom of the rubber grommet is against the standoff.

Use a 4-40 screw to attach the PlungerE2 print to the back of the PlungerE1 print.



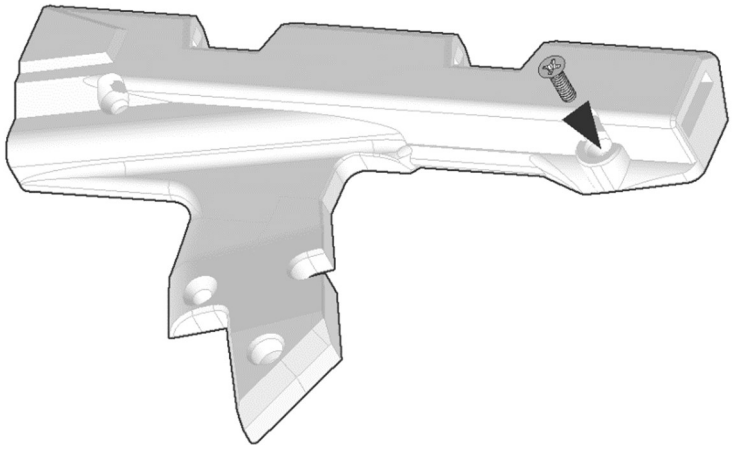
Add a 123 o-ring to the undercut of the PlungerE1 print. Apply and spread some silicone oil onto the rubber grommet and o-ring.



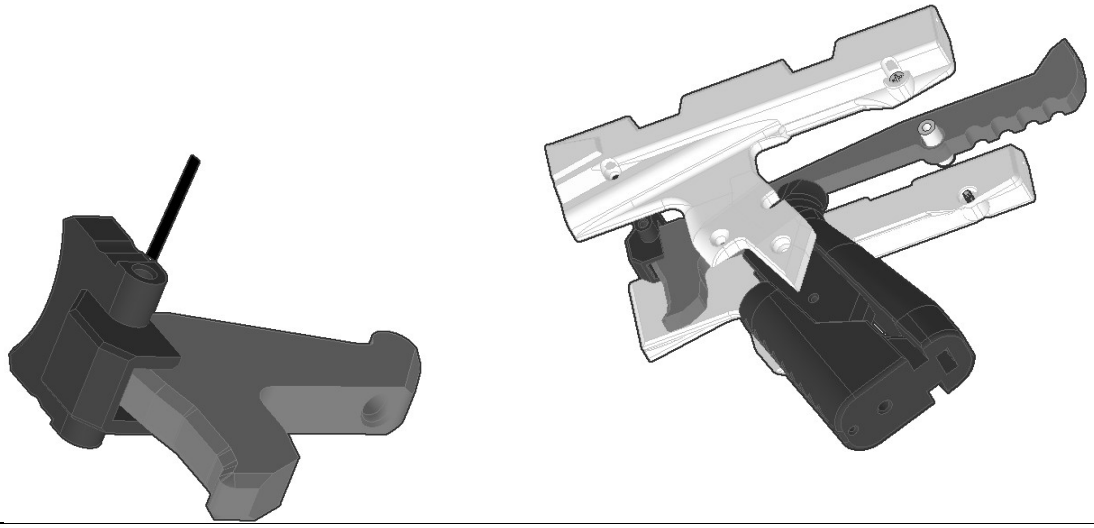
Deburr the edges of the hex sockets in the front of the Muzz print. Then slide a hex standoffs into each.

Drive three 4-40 screws into the holes where indicated to retain the hex standoffs.

Screw the Collet print onto the back of the Muzz print.

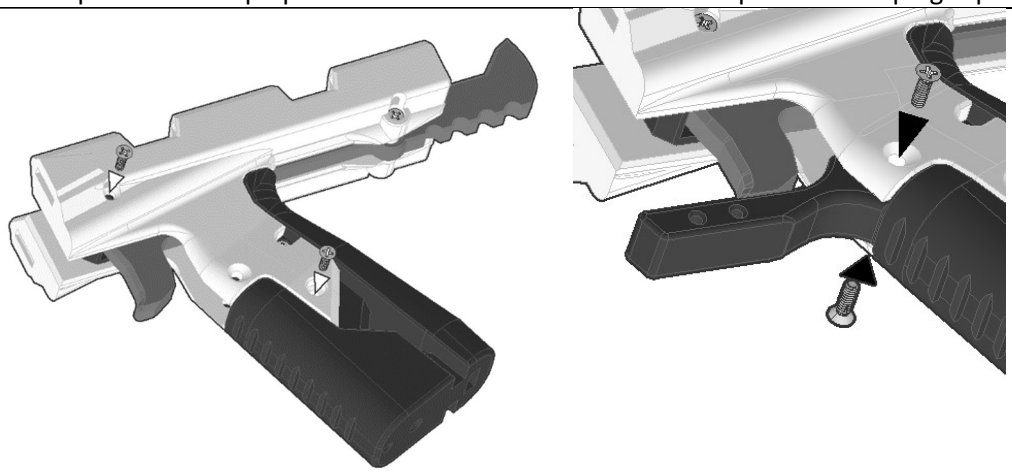


Drive a 4-40 screw into the GripLeft print where indicated until it bottoms out. Repeat for the GripRight print.



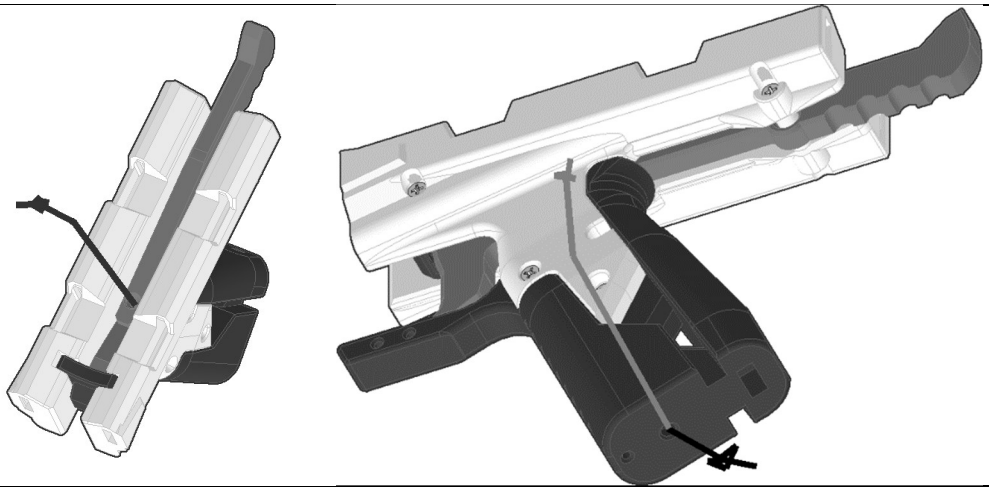
Line up the hole in the Trigger print with the through hole in the GripB print. Force a short pin through both until centered.

Place a plastic spacer into the center hole of the Sear print. Sandwich the Sear, Griddle, and GripB prints inbetween the GripRight and GripLeft prints, placing the screws you drove into the GripLeft and Grip Right prints into the center hole of the plastic spacer. The GripB print should fit into the slots in the GripLeft and GripRight prints.

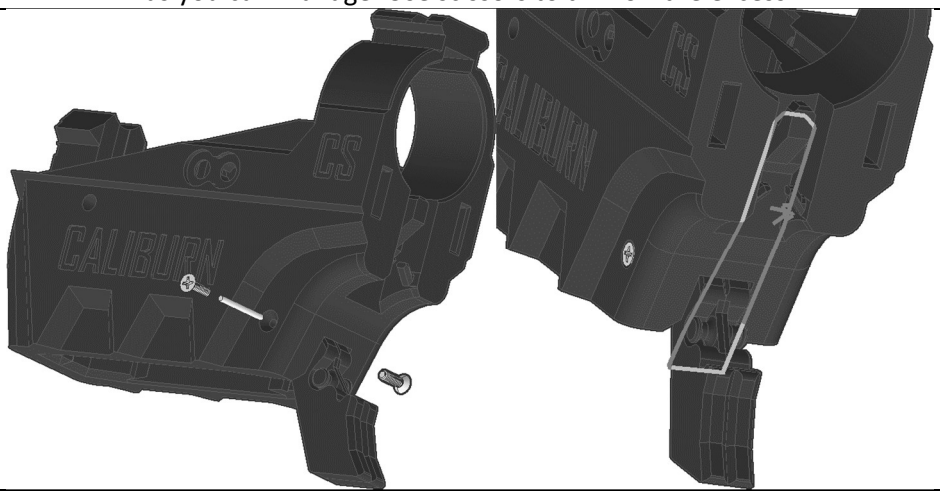


Drive two 4-40 screws into the holes where indicated. Repeat for the opposite side.

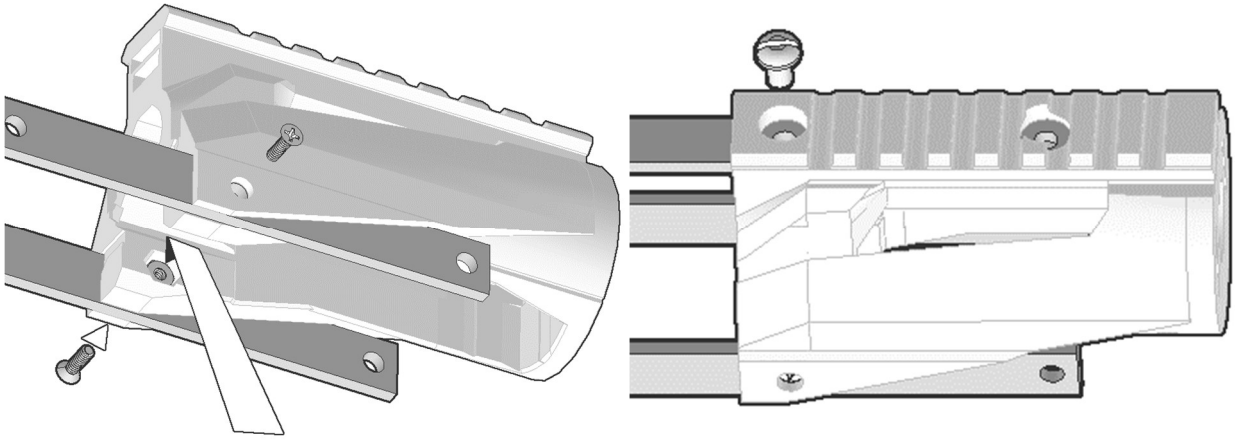
Slide the Tguard print into the front of the assembly and secure with two 4-40 screws.



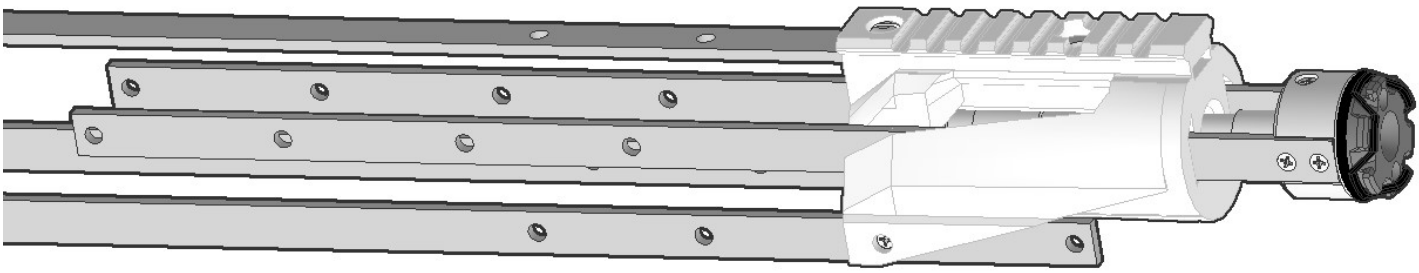
Tie a knot in the free end of the elastic cord and fish the opposite free end through the holes in the sear, trigger, and Griddle prints.
The elastic cord will poke out the bottom of the Griddle print. Pull it taught, then tie a knot as close to the Griddle print as you can manage. Use scissors to trim off the excess.



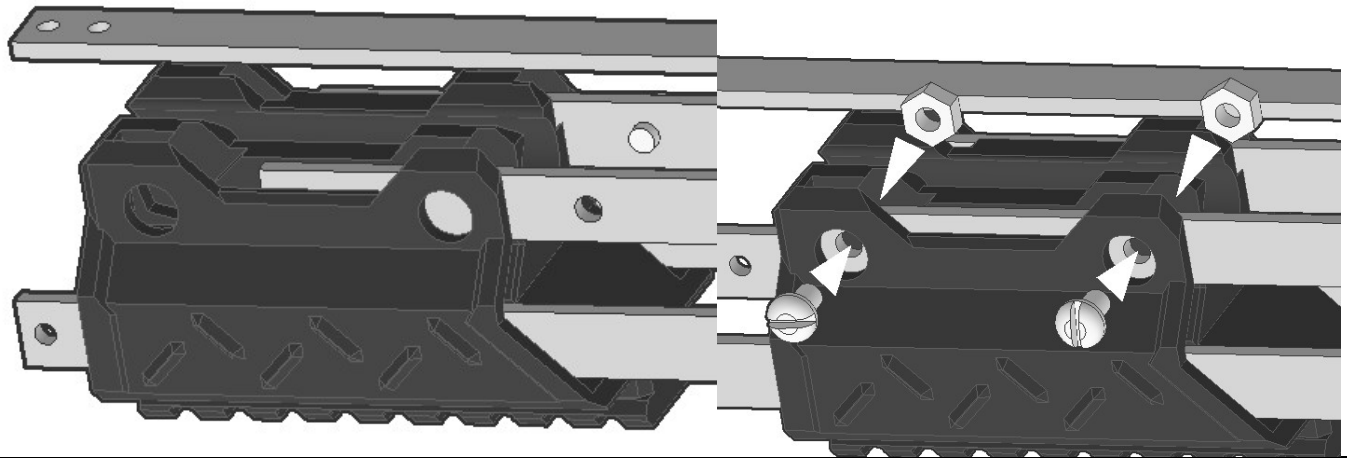
Slide the TRelease and NRelease prints into the MagLower print so that their through holes all line up.
Force a short pin through all three until roughly centered.
Drive a 4-40 screw in from each side to retain the pin.
Loop some elastic around the front of the two release prints, then up over the larger hook in the back of the MagLower.
Pull taught then tie a square knot to complete the elastic loop. Then trim off the excess.



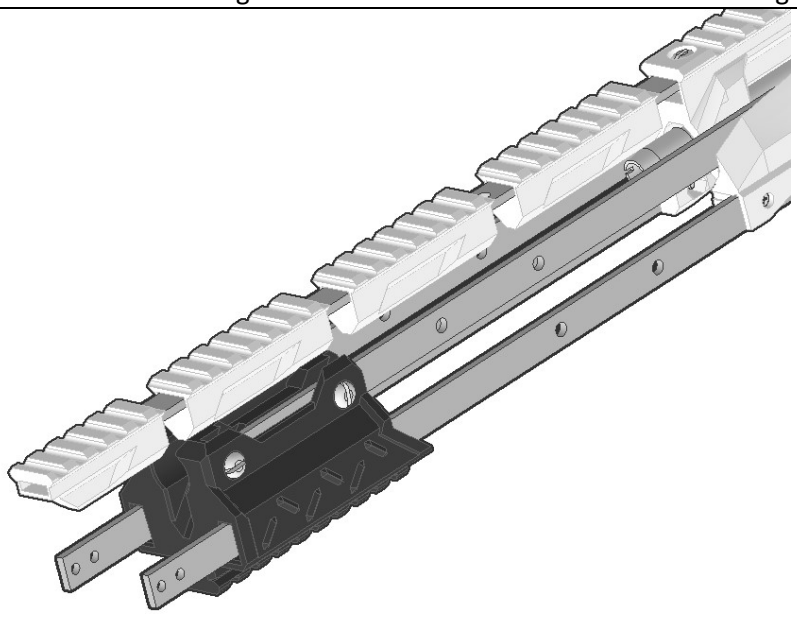
Fit a hex standoff into the socket inside the MagUpper print. Line a BoltArm4 up with this hole, then drive a 4-40 screw into the hex standoff from the outside until the screw bottoms out. Repeat for the opposite side.
Slide a hex nut into the lower slot in the front of the MagUpper print, then a third BoltArm4 into the wider slot above it.
Drive a 10-32 screw into the hole in the bolt arm, and then into the hex nut.



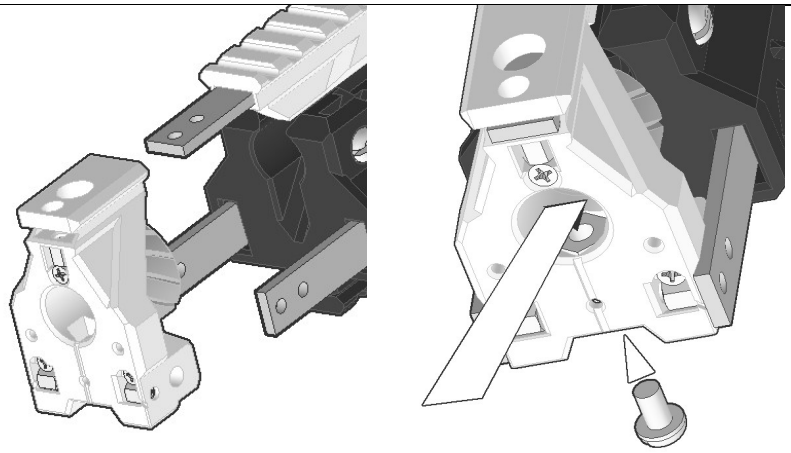
Slide the Ramrod Assembly in through the back of the MagUpper assembly.



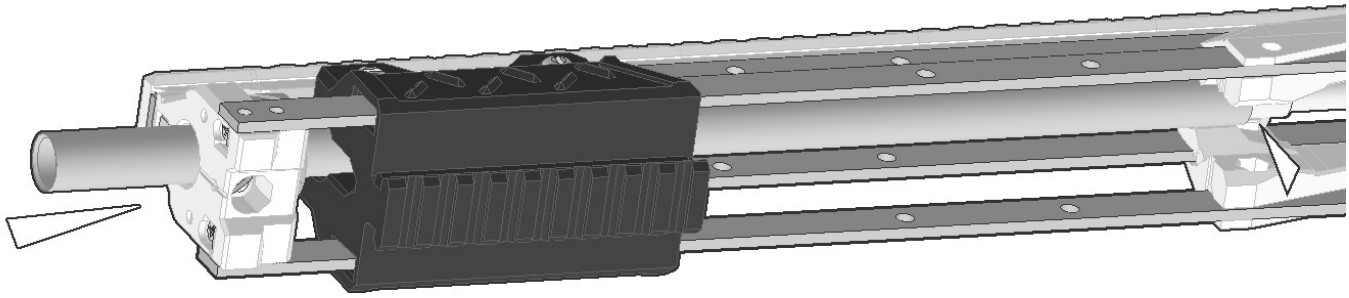
Slide the Doom4 Print onto the lower pair of BoltArm4s, and then onto the pair from the Ramrod assembly.
Slide a hex nut into the angled slots as shown. Line up the hex nuts and the holes in the BoltArm4.
Drive 10-32 screws in through the BoltArm4 and into the hex nuts until tight.



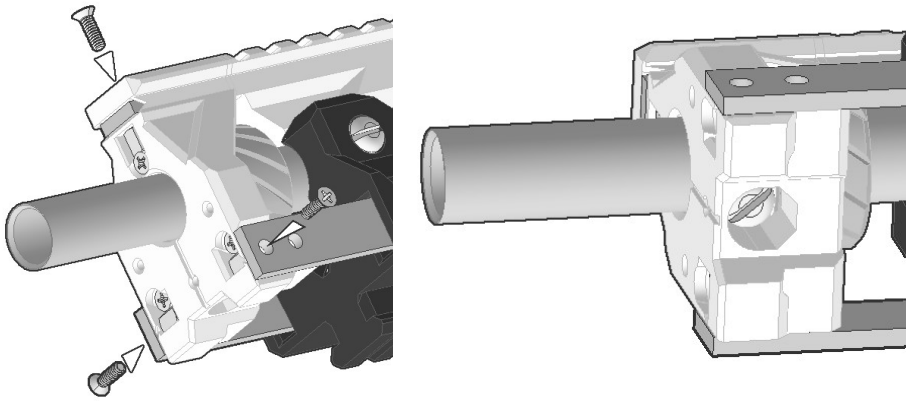
Slide three 4bs prints onto the upper BoltArm4, and then the remaining 4bsf print until they're all stacked against the MagUpper print.



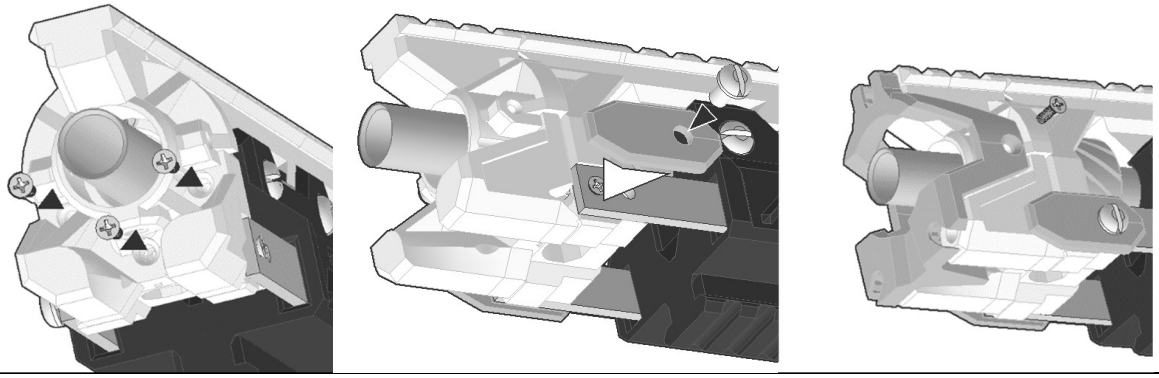
Slide the Muzz assembly onto the upper BoltArm4's end and between the BoltArm4 pair.
Put a hex nut into the slot inside the Muzz print, then drive a 10-32 screw into it from the hole in the underside of the print.



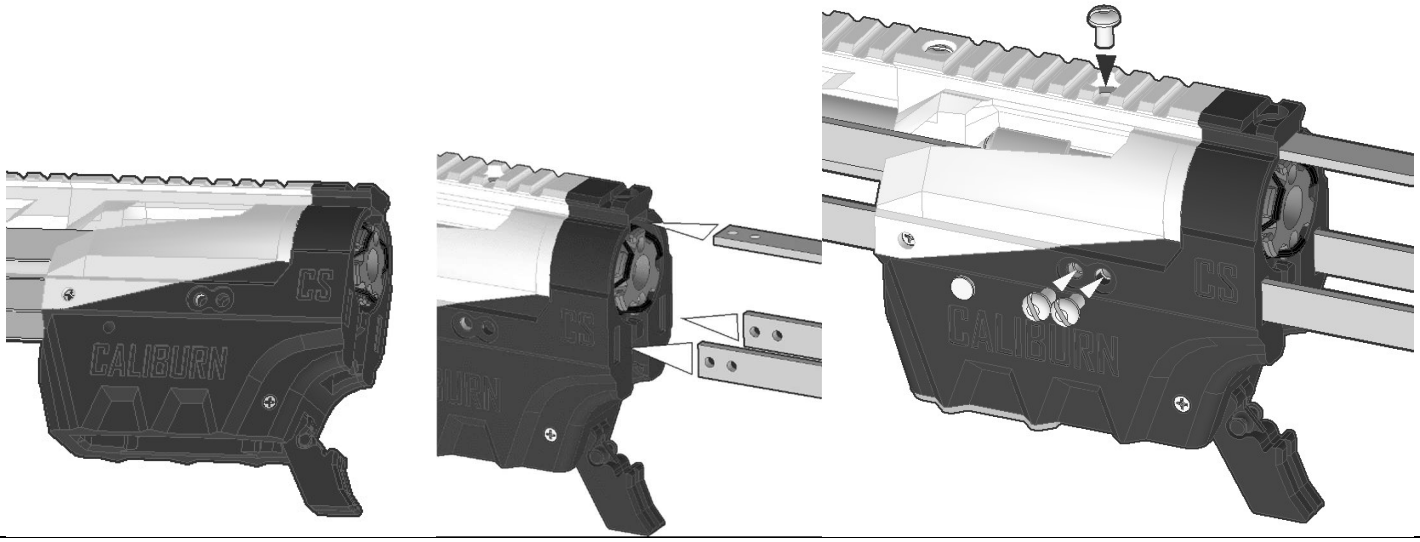
Slide the barrel in through the Muzz print, through the Doom4 print, and then into the socket in the front of the MagUpper print until it bottoms out.



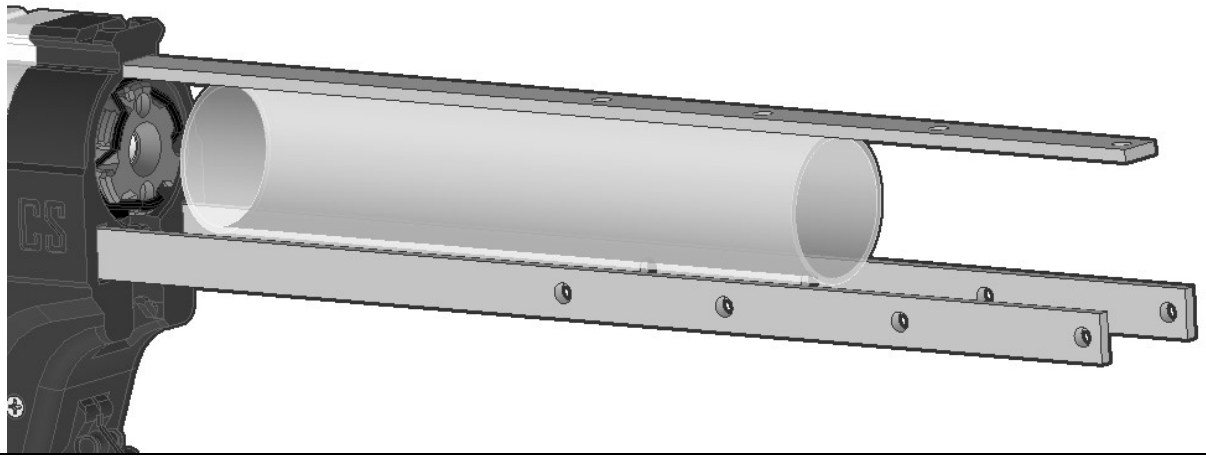
Secure the Muzz assembly to the three holes at the very ends of the BoltArm4 set using three 4-40 screws.
Tighten the screw from the hole in the bottom of the Muzz assembly to clamp the barrel in place.



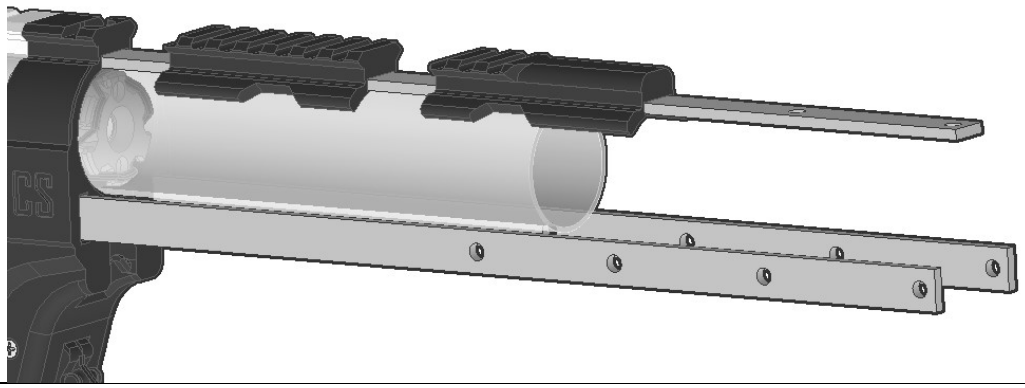
Line the Muzz2 print up with the end of the blaster and secure it to the front by driving three 4-40 screws through it.
Place the 4tie print over the small screw in the side of the muzzle assembly and secure it to the aluminum bar using a short 10-32 screw. Repeat on the opposite side.
Slide the Trench print onto the front of the blaster and secure using a 4-40 screw driven in through each side.



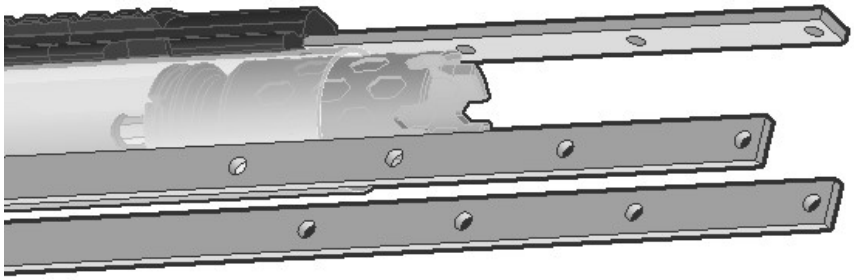
Slide the MagLower assembly onto the back of the MagUpper assembly.
Slide the last three BoltArm4s into the slots in the back of the MagLower print until their threaded holes line up with the holes in the sides and top of the assembly.
Drive two 10-32 screws into the side holes. Repeat for the opposite side.
Drive a 10-32 screw into the hole in the top of the assembly.



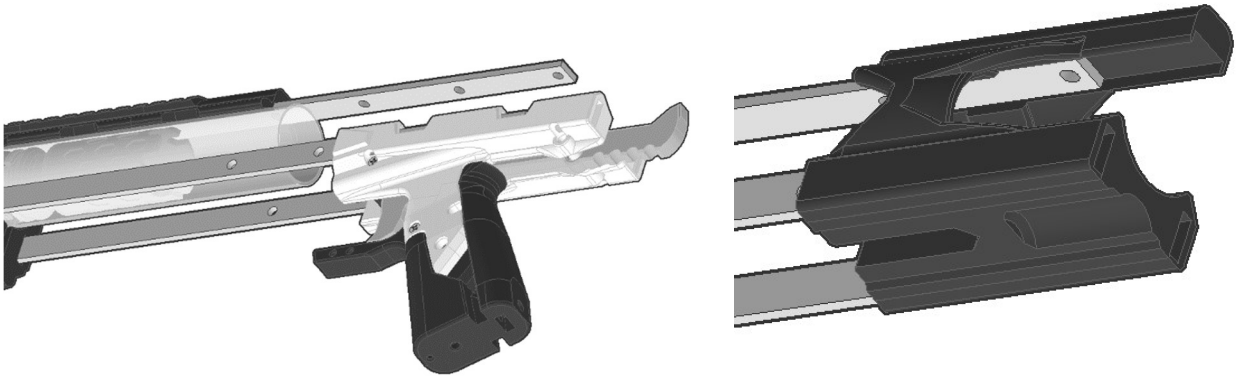
Apply some silicone oil to the inside of the plunger tube near both ends.
Slide it into the back of the Magwell assembly and onto the back of the Ramrod assembly.



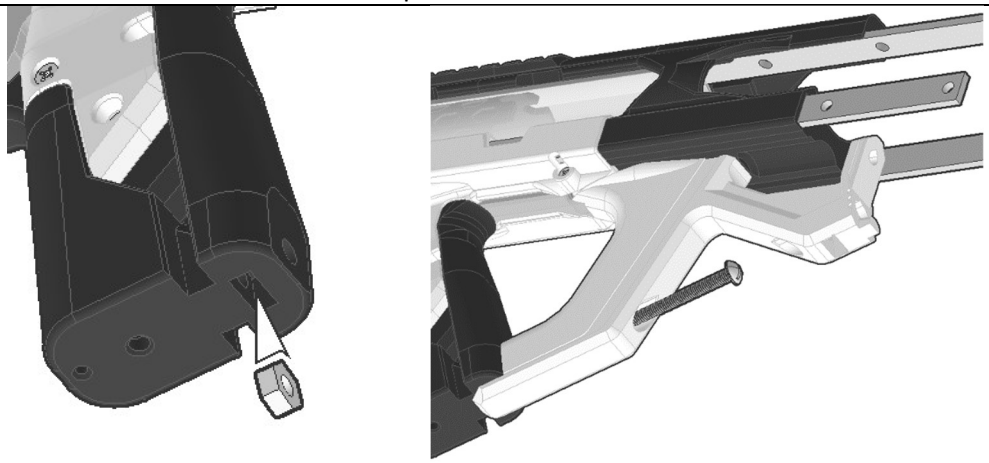
Slide the Rail1 and Rail2 prints onto the upper BoltArm4. These prints may need to be deburred at one end in order to fit.



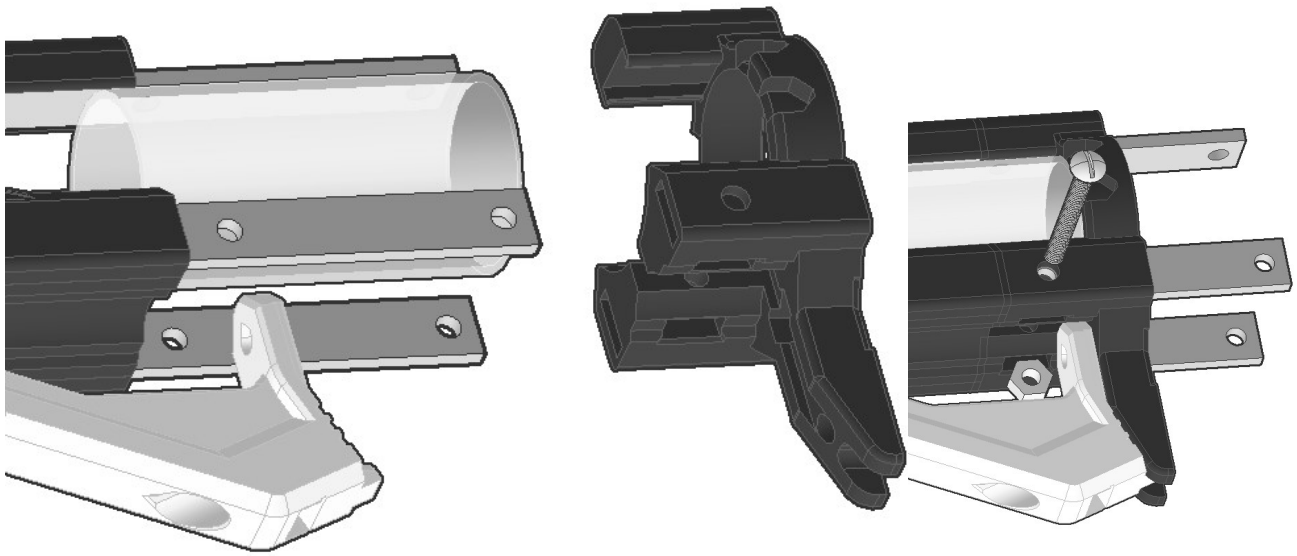
Slide the Plunger assembly into the back of the plunger tube.



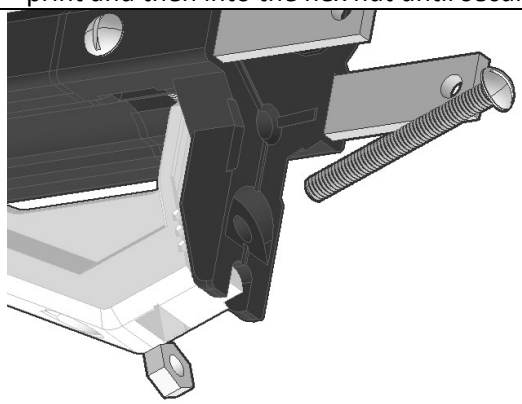
Slide the Grip assembly onto the lower pair of BoltArm4s.
Slide the Stock print onto all three BoltArm4s.



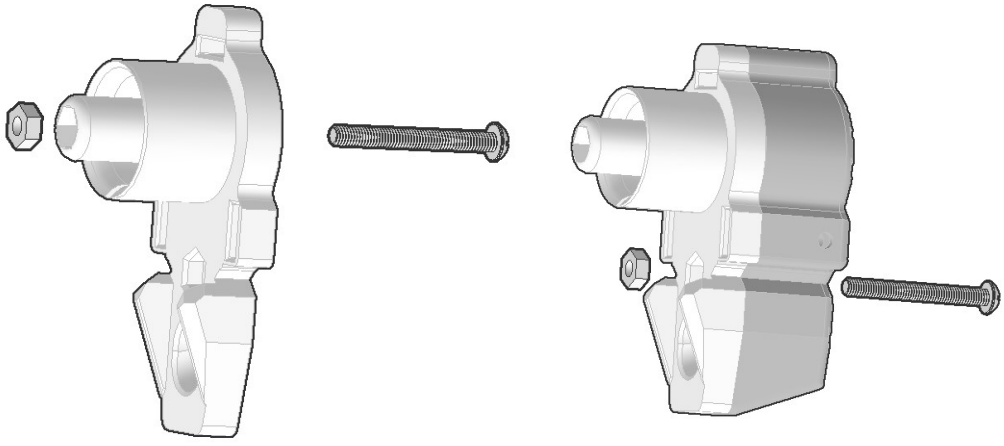
To install the optional thumbhole stock (sold separately) add a hex nut into the slot in the bottom of the Grip assembly. Line the Spacer3a print up with the hole in the back of the Griddle print, then use a long 10-32 screw to attach it through the hole and hex nut.



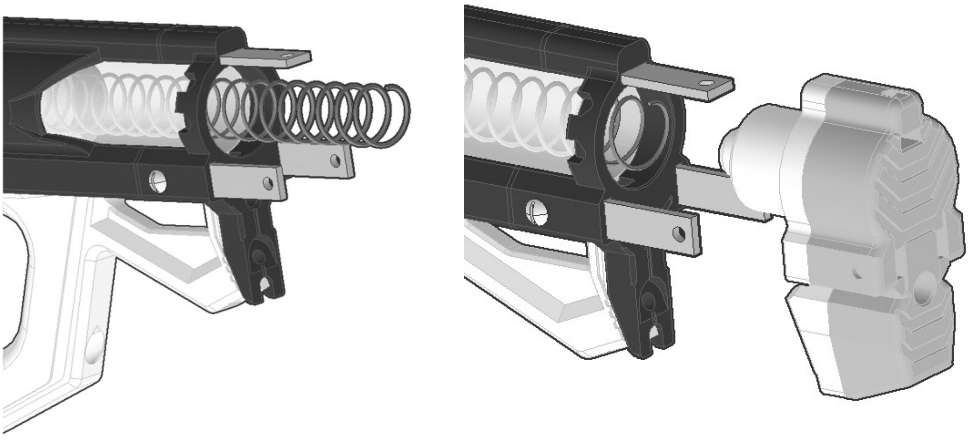
Slide the 3-inch long polycarbonate tube into the assembly. Then the FButt print onto all three BoltArm4s until the through holes in the side line up with the holes in the BoltArm4s.
You may need to use a 3/16” drill bit to clean out the holes in the print prior to the next step.
Slide a hex nut into the slot further away from the side shown, then drive a long 10-32 screw in through the side of the print and then into the hex nut until secure.



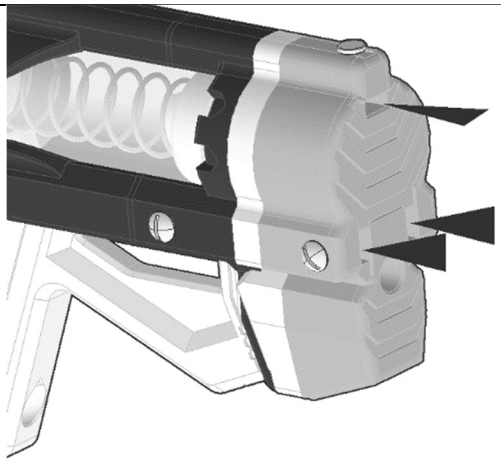
Slide a hex nut into the slot in the bottom of the Spacer3a print, then drive a long 10-32 screw in through both print and through the hex nut until secure.



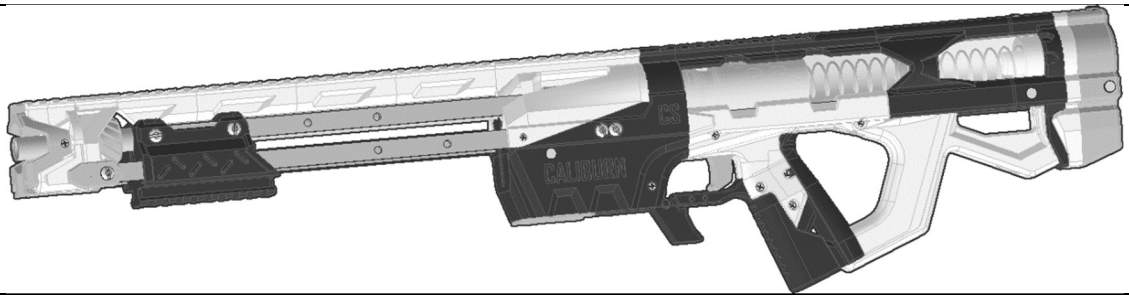
Place a hex nut into the socket in the front of the BackB print. Drive a long 10-32 screw in through the back of the print and through the hex nut until tight.
Add a hex nut to the lower socket in the BackB print.
Line up the lower holes in the Butt and BackB prints, then drive a long 10-32 screw through both and then through the hex nut until tight.



Add the main spring to the back of the blaster.
Slide the Buttplate assembly onto the end of the blaster until the holes in it line up with the holes in the BoltArm4s.



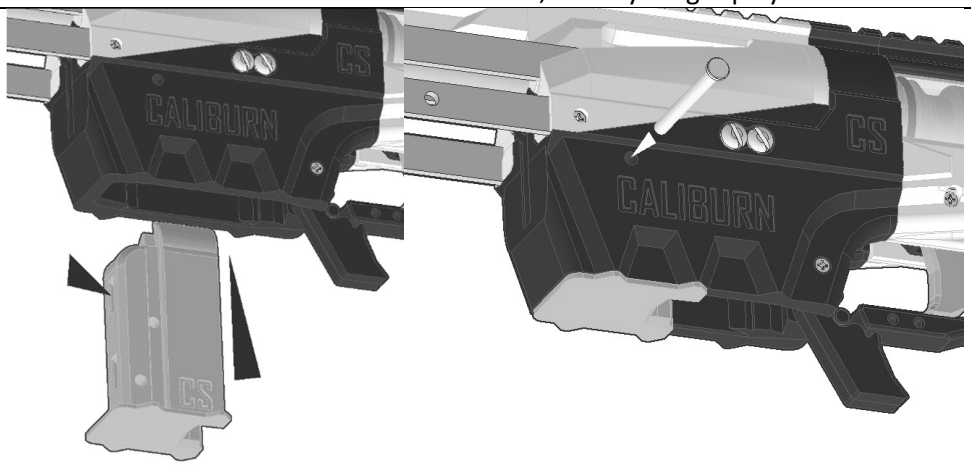
The through holes in the butt assembly may need to be cleaned up with a 3/16” drill bit prior to being secured.
Add a hex nut into the rightmost slot in the back of the Butt assembly, then drive a long 10-32 screw in through the Butt print, BoltArm4 pair, and finally through the hex nut until secure.
Repeat the process for the upper slot and long screw going in through the top of the assembly.
If desired these screws can be replaced/substituted with quick-release pins.



Slide the foregrip back to compress the mainspring until the plunger gets engaged on the Sear. Insert 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 three 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 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 swap from Nstrike magazines to Talon magazines just slide the MagAdapter into the bottom of the magwell.
Use a 3/16” drill bit to clean up the holes in both the Maglower and MagAdapter prints.
Secure the MagAdapter print with a takedown pin or long screw. The Adapter print includes a hex nut slot for the latter.