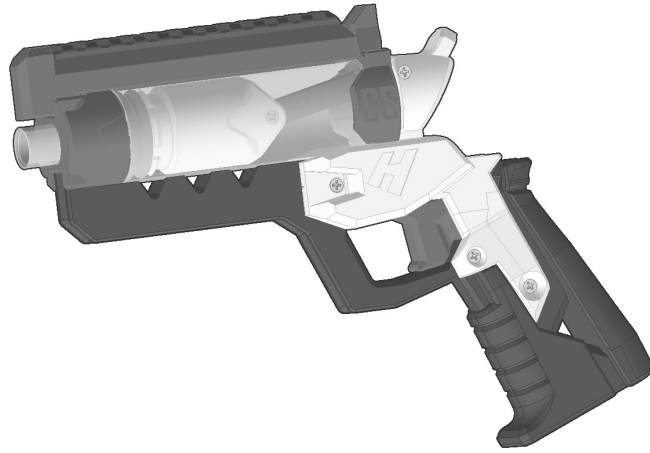


HYPR ASSEMBLY INSTRUCTIONS

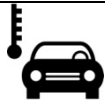


The HYPR is a Muzzle-Loading Single-Shot Homemade Nerf Blaster design released as a Non-Commercial license file set by Captain Slug (<http://www.captainslug.com>).

You are welcome to and encouraged to modify the files in any way you want. All of the parts can be printed with infill as low as 20% in PLA, but I would recommend printing in layers of 200 Micron or smaller. Also set the wall/perimeters to 1.5mm to 2mm thickness.

Hardware kits and Blaster kits are available for sale. I'm producing these myself in what remains of my free time.

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



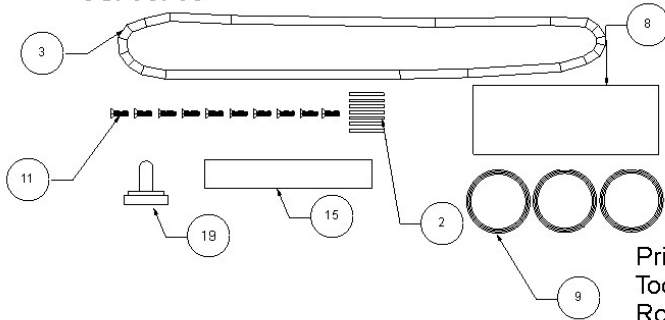
DO NOT STORE IN TEMPERATURES ABOVE 100F. Storing the blaster inside of a car in warmer months will cause the printed parts to distort or warp beyond their intended shape. If you need to store one in a vehicle temporarily, store it in the trunk.



DO NOT aim this blaster at faces. The muzzle velocities this design can reach are between 60fps and 100fps depending upon the darts used and the bands installed.

WSPR Hardware Kit

08/10/19



Item #	Quantity	Part Name
2	7	Short Pins
3	3	1/8" Cord
8	1	Plunger Tube
9	3	Dash 123 O-Ring
11	10	4-40 Screws
15	1	Barrel
19	1	M12 Toggle Switch Boot

Printed Parts NOT included.
Tools needed: Philips Screwdriver,
Round Needle File, Scissors.

CAPTAINSLUG.COM

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. Item #19 is not used in this build.

To assemble this blaster you will need a Small Philips Screwdriver, and a Round Needle File.

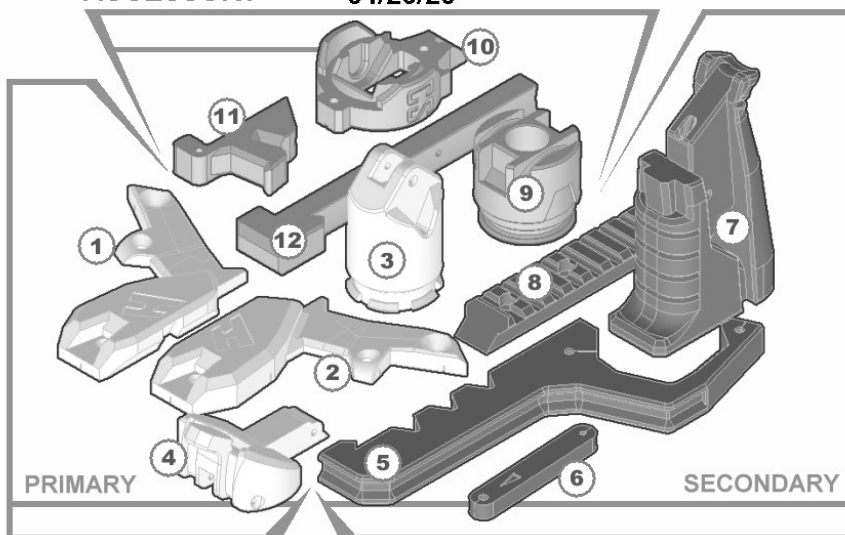
You may also need a 3/32" drill bit and a SLOW power drill.

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.

HYPR Printer Part Set

04/26/20

ACCESSORY



Item #	Quantity	Part Name
1	1	GripRight
2	1	GripLeft
3	1	Plunger
4	1	Cammer
5	1	Wunderbar
6	1	Conrod
7	1	Griddle
8	1	Rail_Max
9	1	Base
10	1	Yoke
11	1	Trigger
12	1	TopRail

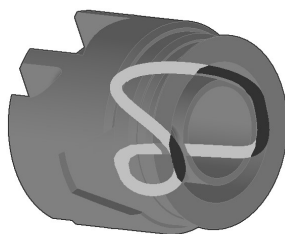
Note: Print layers should not be any larger than 200 microns. Parts were designed for PLA filament, but can be printed using ABS without issue. No support material is needed. Most of the parts should print to tolerance on their hole diameters, but results may vary so expect to have to touch up some of them with a round needle file

- Captain Slug

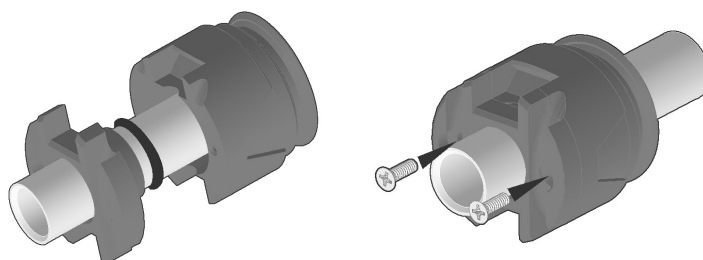
Assembly Instructions:

<http://www.captainslug.com/nerf/HYPRAssembly1.pdf>

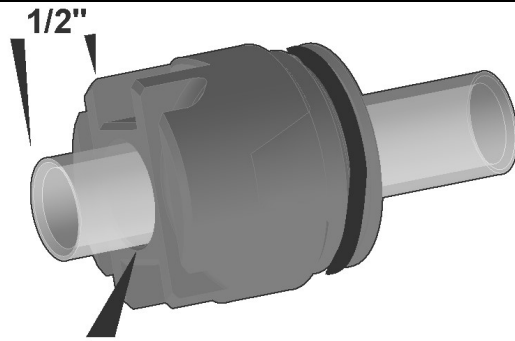
Above is a list of every printed part needed to assemble this blaster. The majority of the through holes should print to the required tolerance, but you will likely have one or two that may require minimal filing. Also make sure to trim off any burrs or oversized edges.



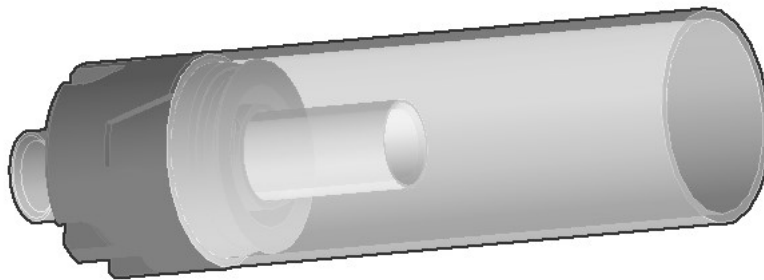
Fold an o-ring in half and push one side into the cavity in the bottom of the Base print. Then insert the other half into the other side of the cavity.



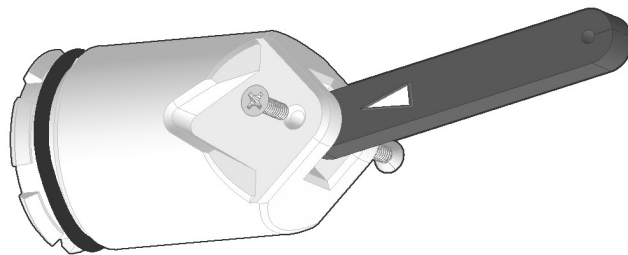
Slide the barrel in through the front half of the Base prints, add the 016 size o-ring onto the outside of the barrel, then feed the barrel into the rear half of the Base prints. The o-ring will get wedged between the two halves. Use two 4-40 screws to drive the two print halves together until the barrel is secure.



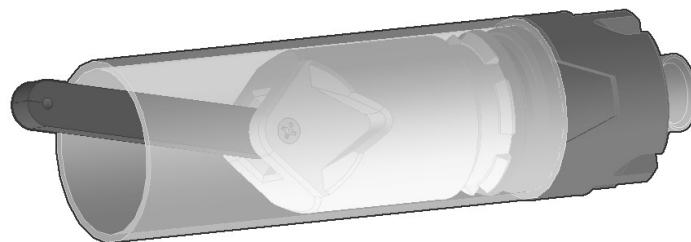
Add a 123 O-Ring to the undercut on the outside of the print.
The barrel should be roughly $\frac{1}{2}$ an inch away from the front face.



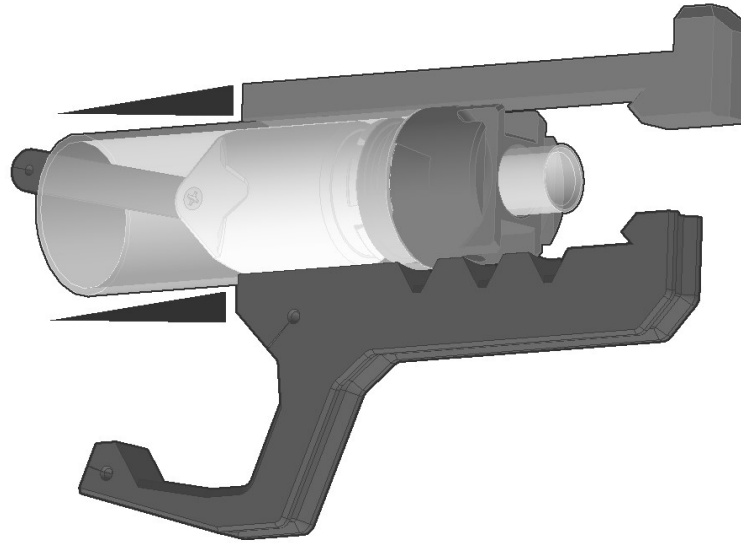
Slide the unlubricated end of the plunger tube onto the o-ring on the Base print.



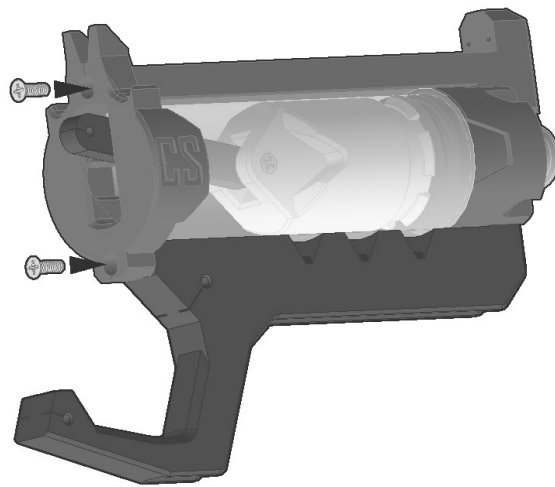
Add an o-ring to the undercut on the Plunger print.
Line the larger hole in the Conrod print (as indicated by the arrow in the print) with the holes in the back of the Plunger print.
Drive a 4-40 screw in from each side and into the hole in the Conrod print to retain it.



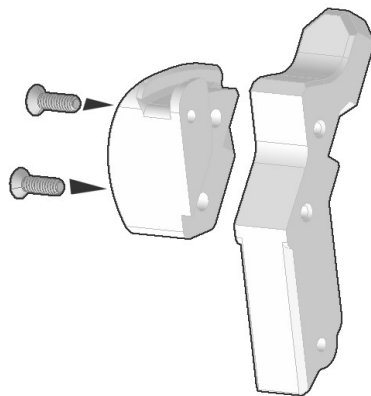
Slide the plunger assembly into the lubricated end of the Plunger tube.



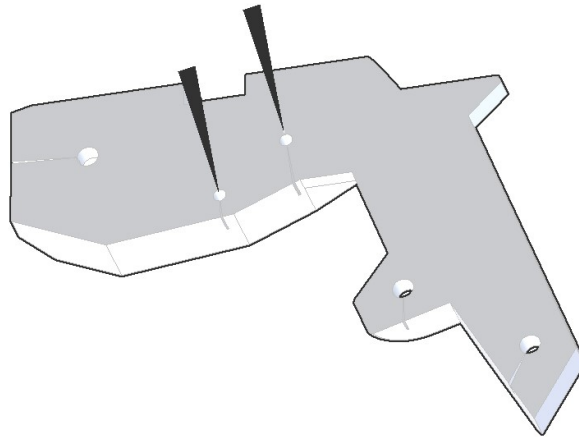
Slide the TopRail and Wunderbar prints into the keyways in the front of the Base print.



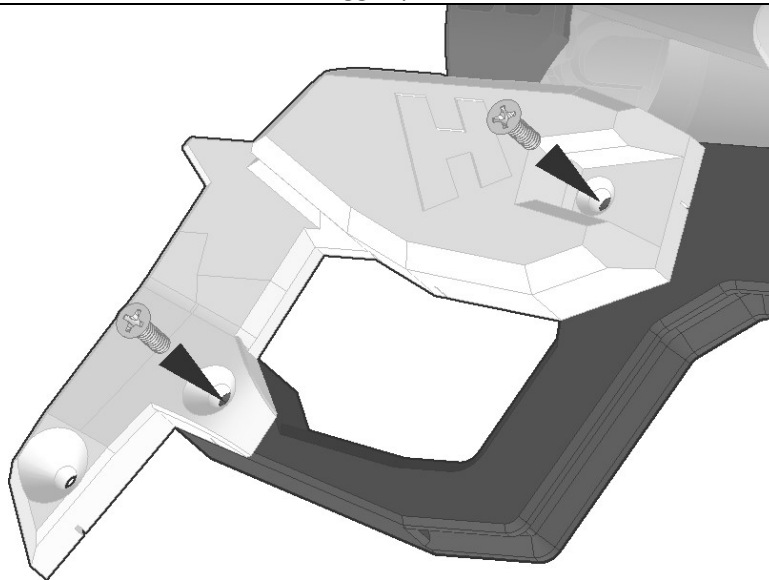
Push the Yoke print onto the back of the plunger tube and line up the holes in it with the holes in the TopRail and Wunderbar prints. The Conrod print should poke through as shown.
Drive a 4-40 screw in through each hole to secure the prints together.



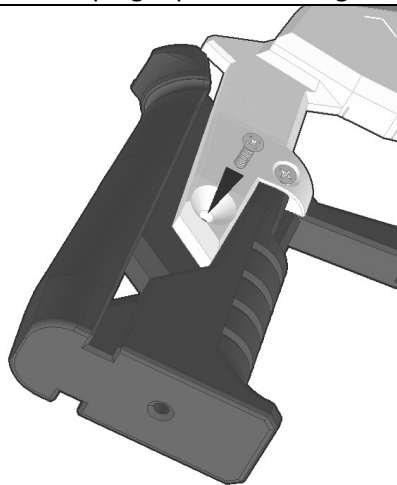
Drive 4-40 screws in through the CammerRight piece and then into the central Cammer print to create the partial Cammer assembly.



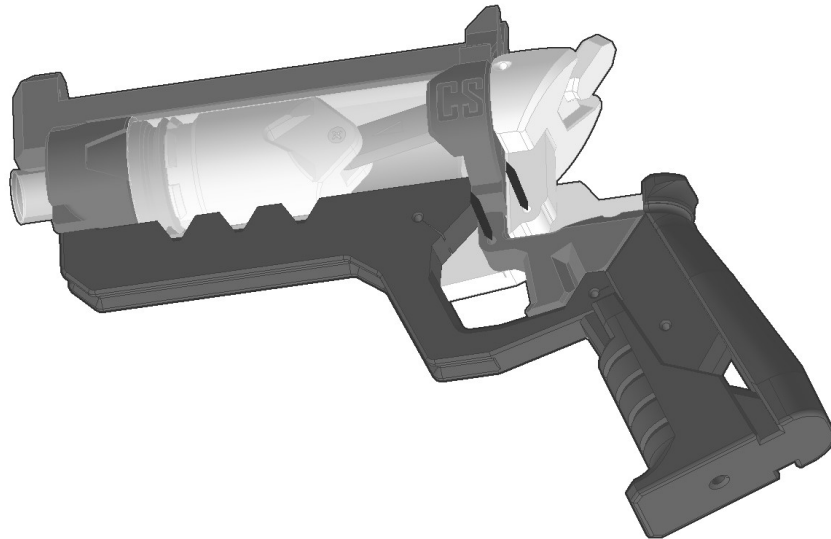
Take a short pin and check the fit of it in the two small holes in the GripLeft and GripRight prints. If it's not a loose fit clean out the holes with a 3/32" drill bit. Perform the same check on the through-holes of the Cammer, Conrod, and Trigger prints.



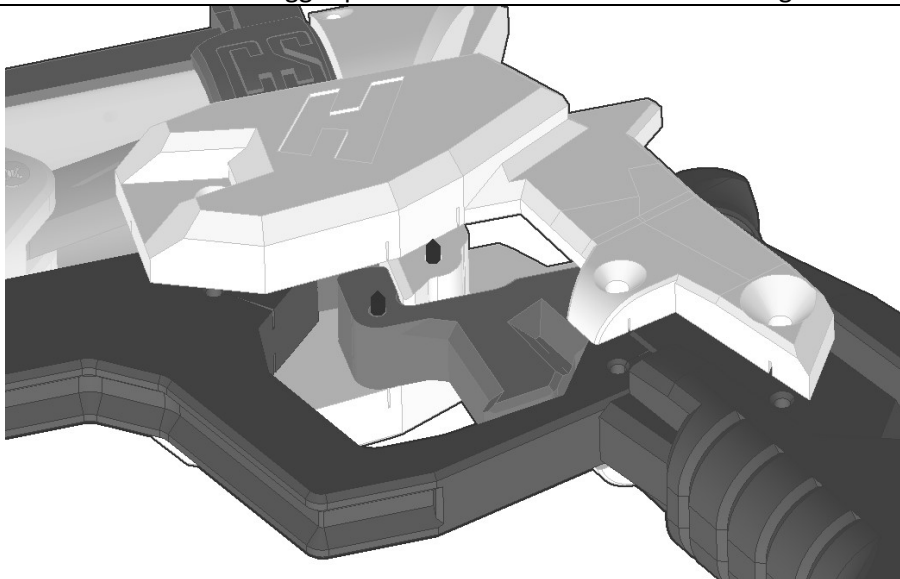
Use two 4-40 screws to attach the GripRight print to the right side of the Wunderbar print.



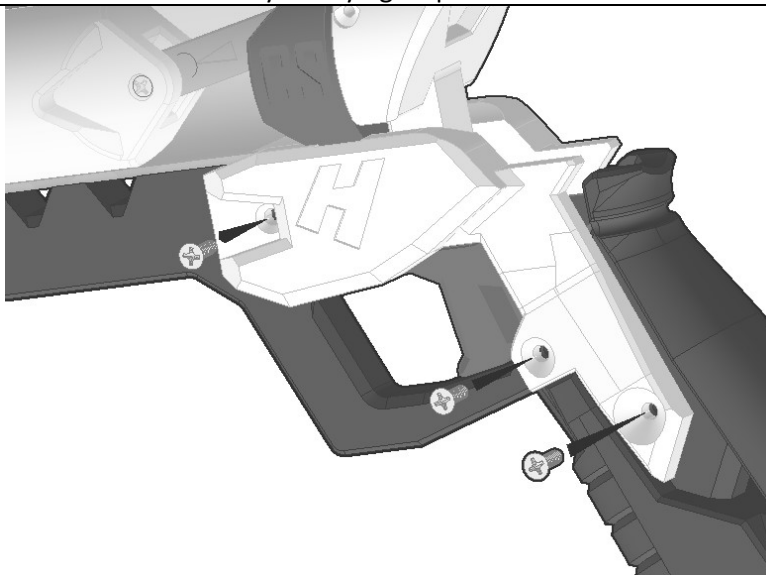
Use a 4-40 screw to attach the Griddle part to the GripRight part.



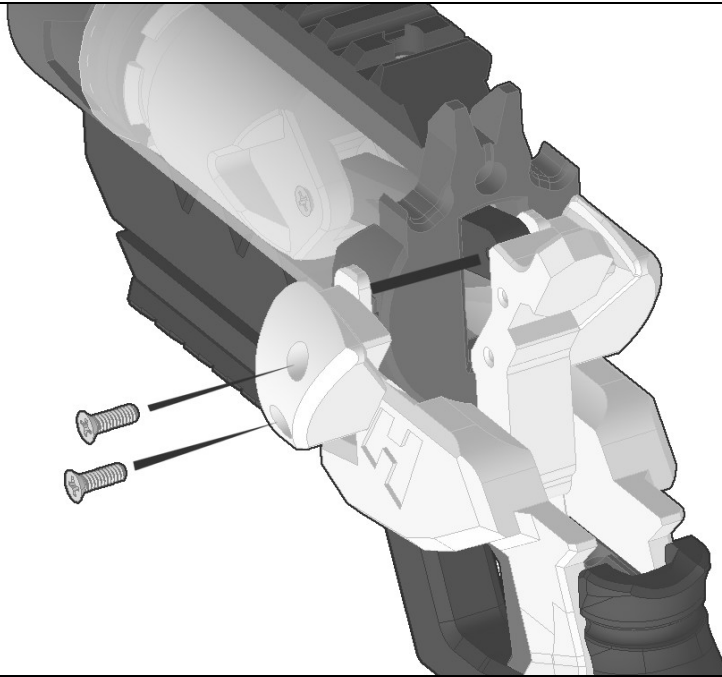
Insert a short pin into the Cammer and Trigger parts as shown and into the matching holes in the GripRight print.



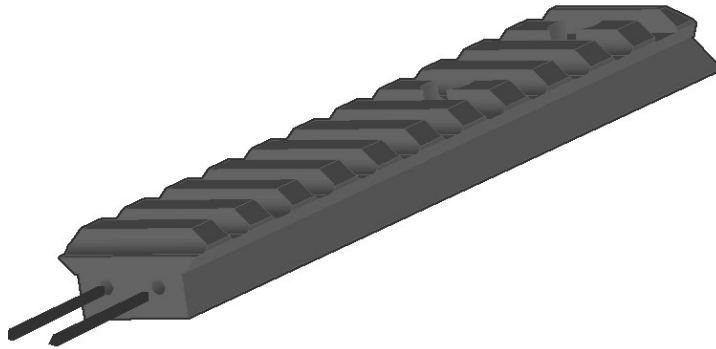
Slowly work the two holes in the GripLeft print onto the two exposed short pins.
This is the only annoying step in the instructions.



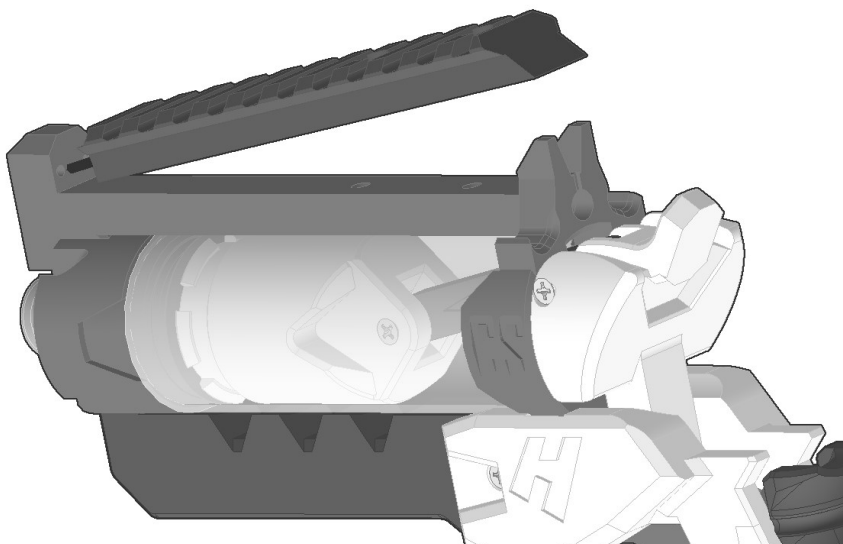
Secure the GripLeft print using three 4-40 screws.



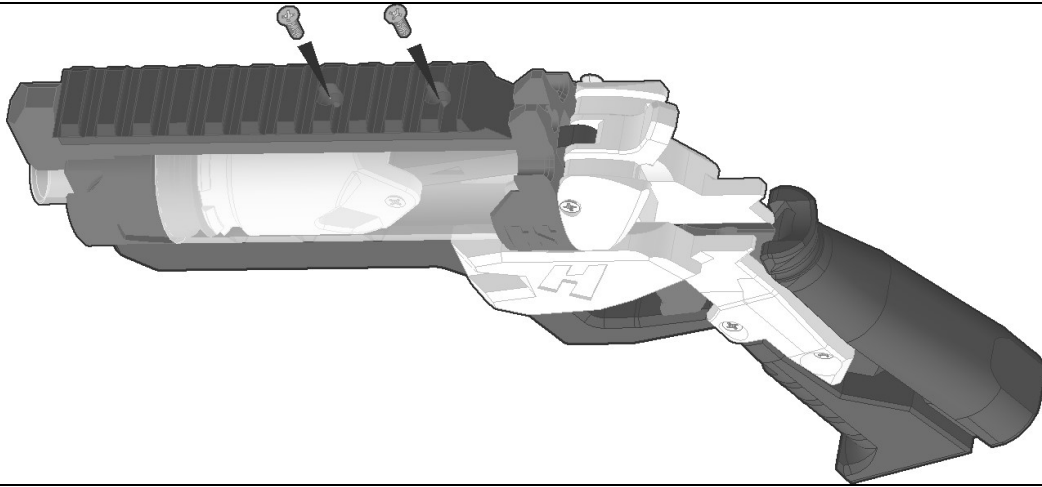
Feed a short pin into the hole in the left side of the Conrod print and then into the CammerRight print.
 Slide the CammerLeft print onto the exposed end of the short pin.
 Retain CammerLeft print by driving a 4-40 screw through each hole and into the CammerMiddle print.



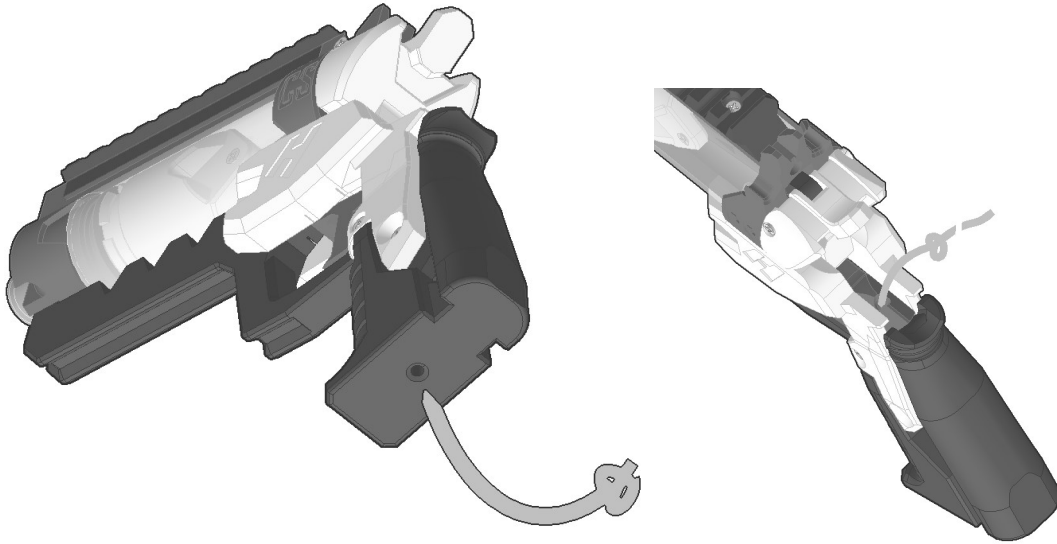
Use a hammer or whatever else you feel like hitting them with to drive a short pin into each of the two holes in the end of the rail_max print.



Push the pins into the matching pair of holes in the front sight blade of the TopRail print. Then wedge the opposite end of the rail_max print ahead of the rear sight fork of the Yoke print.



Drive two 4-40 screws in through the holes to secure the prints together.



Take the smaller elastic cord and tie a knot at the end of it. Feed the free end through the hole in the bottom of the Griddle print, and subsequently through the Trigger print.

Pull the excess of the free end taught and tie a knot within $\frac{1}{2}$ of an inch from the trigger. Use scissors to trim off the excess.

If you do not have a smaller elastic to work with a rubber band can be doubled-up on the Griddle print so that one end is looped over the trigger and the other under the heel of the Griddle print.



Take one of the larger loops of elastic and hook it under the hammer through the U-shaped cut at the back of the Cammer print. Wrap it up and over the Base print following the curved troughs in the front of the print. Take the remaining elastic and pull it around behind the Grip, then up and behind the Ear on the back of the Cammer print.

The cords should wrap exactly as shown and not be doubled-up over the top of the blaster at forks in the Yoke print.

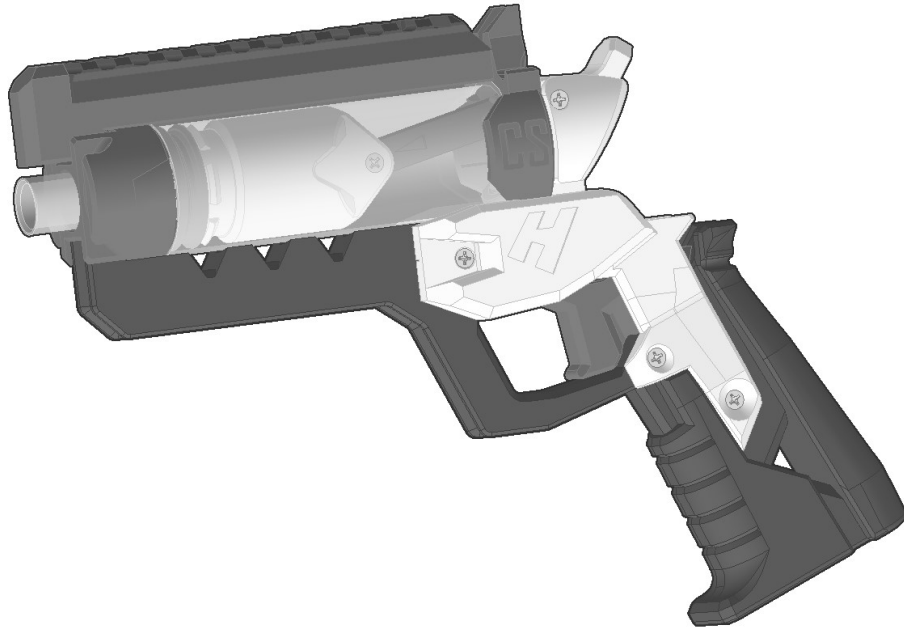
Completing a single Wrap 1 will result in 60 fps averages using full-length darts.



Repeat Wrap 1 with the second larger loops of elastic, but rather than lead the opposite end over the Ear of the Cammer print, leave it in the groove cut in the back of the Griddle print.

Adding Wrap 2 to Wrap 1 will result in 75 fps averages using full-length darts.

Adding Wrap 1 to Wrap 1 will result in 90+ fps averages using full-length darts.



The file set includes an alternate "Flat" plunger. It is intended to be used with the barrel mounted flush with the inside of the Base print so that the majority of it sticks out the front of the blaster. That setup will result in a slightly longer blaster, but should result in higher fps averages.

I would also recommend cutting the barrel down to 1-1/2 inches in length and using the "flat" plunger if you intend to only fire half-length darts.