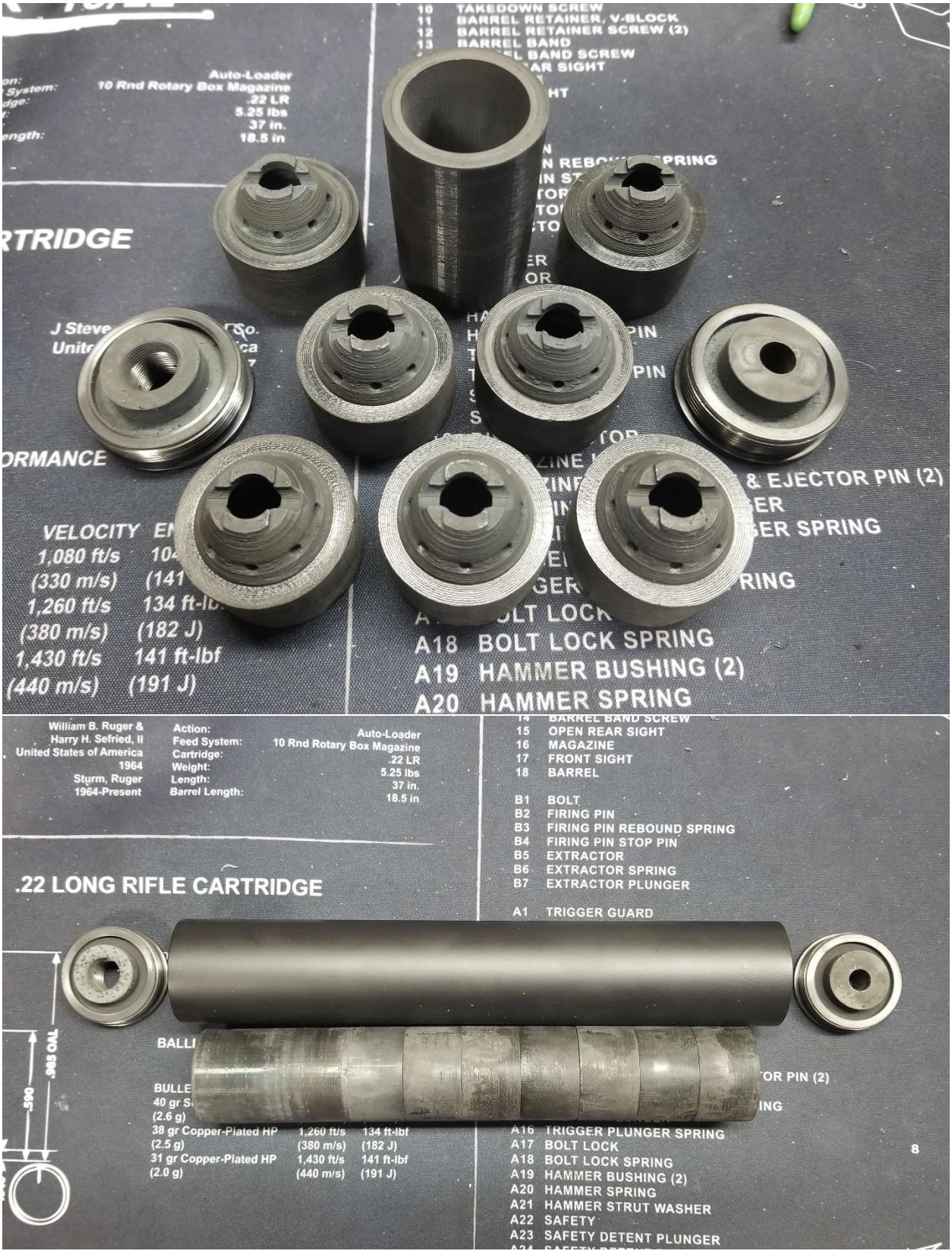
The IPG223Silencer Assembly Guide (iprintgunz)



Preface

The IPG223Silencer is a DIY silencer utilizing steel external components and PLA internal components. As a note, it will be referred to as a silencer as that is the correct legal term for it, even though suppressor is a more fitting name. This silencer is unofficially rated for .22LR rapid-fire and slow .223. It was created due to the lack of 3D-printable .223 silencers that are feasible for the average citizen to create.

There is no official assembly video for this silencer, however the actual assembly of the components is quite simple. The construction process of this silencer includes annealing, so I recommend you watch a few YouTube videos on annealing and what it actually does so that you have some background knowledge of the simple process you will complete. CNC Kitchen has several good videos. I also do not go into great extent on drill your endcap hole, since that is more general silencer-building knowledge and isn't specific to this build. I also recommend you watch YouTube videos to gain knowledge on that. I will still include necessary resources.

I do not request any monetary compensation or support for this design, I only request that you try to get video of you using the silencer and send it to me through email or Keybase so that I can keep track of feedback and try to improve the design.

Please read this carefully: the IPG223Silencer **is a silencer.** If you want to make this legally, you need to have an approved ATF Form1 for it. I can't control whether of not you make it legally, but you're opening yourself up to significant legal repurcussions if you don't file your paperwork. That being said, every gun law is an infringement, the NFA is unconstitutional, civil disobedience should be the standard, and every free person on this planet has the God-given right to self-preservation (no matter what the government says). Can't stop the signal.

Reddit: **u/iprintgunz**

Keybase: **iprintgunz**

Email: **thatprinterguy@yahoo.com**

COME AND TAKE IT

Table of Contents

Preface....2
Shopping/Material List....4
Build Tutorial....6
Step 1: Printing....6
Step 2: Annealing....6
Step 3: Diameter Fitment....7
Step 4: Length Fitment....8
Step 5: Drilling....9
Step 6: Assembly....9
FAQ....10

Shopping/Material List

This page will outline the tools and items you may need to purchase/borrow to complete the silencer. If you already have a 3D printer and have built a silencer before, there won't be much new stuff.

Apogee Tube

The first item is the D-cell carbon steel tube that will be the main component of the actual silencer. It doesn't specifically have to be from Apogee if you can find one of the same exact dimensions, but I used Apogee. You can technically get a titanium tube to save weight, but I can't guarantee it'll be as safe as the carbon steel tube.

-Specifications: Carbon Steel 8.5" Length, 1.5" OD, 1.35" ID

-Link: https://apogeeproducts.com/product/carbon-steel-8-5-inch-d-cell/

SDTA Endcaps (2)

These endcaps fit the tube well (again, if you can find endcaps with the same exact dimensions, feel free to try them, this is just what I know worked for me). You will need **ONE ½-28** threaded endcap to attach the silencer to the barrel, and **ONE solid** endcap for you to drill a hole through as the exit.

-Link: https://sdtacticalarms.com/product/black-carbon-steel-mounts/

Hatchbox PLA – Black

You can try other colors or some High Temp PLA's, but just know it can affect dimension change during annealing and you may have to alter the baffles. The baffles are purposefully enlarged a hair to account for shrinking during the annealing process.

Drill Press or Hand Drill

Obviously a drill press will be easier, but you might be able to manage with just a hand drill. You can get a Wen drill press on Amazon for cheap and it should be more than enough power to drill through your cap.

-Link: https://www.amzn.com/B00HQONFVE

High Speed Steel or Cobalt Drill Bits

This is just general drilling equipment, you can choose whatever set you want, just make sure it includes a small bit to drill your pilot hole, and a bit at the size you want your finished hole (~0.3”). I will not include a link for this because there isn’t one specific set I can recommend, just get the cheapest one you can find if you really don’t care.

Bake-Safe Bowl/Pan

Yep, just your Aunt Suzie’s baking pan. You’ll be baking sand but as long as you wash it out afterwards it shouldn’t damage your dish or anything.

Food-safe Sand

I used some fine sand I found at my local craft store, just make sure you aren’t using wet sand that you find at Home Depot or anything. I’ll include a link, but don’t feel like you must purchase this specific sand. I used about 6 pounds (4 bottles) of it for my bowl, but you may need more or less depending on your dish size.

-Link: https://www.hobbylobby.com/p/23516

Misc. Items

Sandpaper/belt sander, an oven, calipers (helpful), and some snacks.

Build Tutorial

I will do my best to make this an easy-to-follow tutorial, however you can contact me if you get stumped at all along the way.

Step 1: Printing

Refer to ReadMe for print information and settings

What you need to print:

-(6x) mid-baffles

-(1x) blast-baffle

-(1x) blast chamber

-(1x) endcap tool

Step 2: Annealing

First, you will need to fill your pan/bowl with your sand. It should be deep enough so that you can fit the baffles and blast chamber into it upright. If annealing multiple pieces at once, make sure you space them out a bit. Place the baffles into the sand cone-down and pack the insides with sand to help it keep its shape when it softens. Once you've packed them, make sure they are deep enough and submerge them under the sand.

Next, you will bake your dish. I baked mine around 230F for 45 minutes. Once time is up, remove your dish, but do not immediately remove your prints. Let them cool inside the sand for about 30 minutes. Then, **carefully** remove your pieces by inserting a fork/utensil **underneath the baffles** and lifting them upward. Try your best to not make actual contact with your baffles, the less you touch them while soft, the better. Now, let your baffles cool on top of the sand. After another 30 minutes, go ahead and just rinse them in room-temp water to get the sand off and finish cooling it.

Congrats, you annealed your parts!

Step 3: Diameter Fitment

First, go ahead and try to fit your newly annealed baffles/chamber into your tube. If you have calipers, you're shooting for about 1.34" diameter since the tube ID is 1.35". Does it fit? If it already fits into the tube, shake the tube. If you can hear an audible rattle, you may want to replace that baffle. If it's a clean fit, sweet! Chances are most/all your baffles will not fit. We can fix that with some elbow grease (or a belt sander). Take any pieces that don't fit, and sand the outer perimeter.

Sanding the outer perimeter (the surface against the sandpaper in the image) will ensure a snug fit. A belt sander can speed up this process but isn't necessary.

Depending on how much your pieces shrunk on the XY plane during annealing, you may need to sand a lot or a little. Shrinking the pieces 1% from the start can help with this, but you will get more pieces that aren't a perfect fit, and you want perfect fits. Step 3 will take the longest of all the steps. Repeat this until all pieces fit into the tube. They should fit snug inside, feel free to push them in a little.

Step 4: Length Fitment

Congrats, you made it past Step 3. Step 4 is similar, but much easier. Do the following steps in order:

1. Screw on the threaded endcap
2. Insert all pieces in correct order (blast chamber, blast baffle, then 6 mid-baffles)

    -Remember, the cones ALWAYS point TOWARDS where the bullet comes from

3. Screw on the solid endcap, only hand tighten. It shouldn't go all the way down.

Annealing shrinks horizontally but expands vertically, meaning we now must shave off some excess height/length from a baffle. Measure the amount of gap between the solid endcap and tube. We want to sand off <u>almost</u> that much off the base of your **last baffle.** It doesn't matter which of the 6 mid-baffles you choose now, but you should make that the designated last baffle from now on. Take that baffle, and sand down the base, intermittently checking your endcap fitment.

Sanding the base (position shown against the sandpaper) will ensure the baffle stack fits well length-wise.

Once your endcap screws onto the tube **<u>almost</u>** far enough, stop sanding. Leaving just a smidge of extra will ensure that the baffles and nice a squished together once you crank on the endcap, which is what you want when you're shooting calibers with a little more *oomph*.

An example of a healthy gap between endcap and tube after hand-tightening.

The same endcap after tightening it with the included endcap tool.

Step 4 complete!

Step 5: Drilling

Step 5 is to simply drill your hole in your endcap. If using the displayed SDTA solid endcap, the inside has a nice hole already going mostly through it that you can follow. This guide is to help with the IPG223 silencer, not general silencer-making, so I won't be going in-depth on this topic. Check out the Form 1 forums, r/Form1, and r/NFA if you need help drilling a hole in steel.

Step 6: Assembly

The order of pieces that a bullet should flow through is as follows:

Blast Chamber -> Blast Baffle -> 6 Mid-Baffles

Just insert them in that order, crank it down, and you're all done with assembly!

FAQ

Q: Does this thing really survive .223?

A: Yes, if you're not stupid with it. Refrain from rapid-fire and you should be fine. If you're worried, check your internals intermittently while shooting.

Q: How much .22LR can it take?

A: I don't have a crazy high round count on mine yet, but it seems to take rapid-fire .22LR just fine. I expect it to last into the thousands.

Q: I'm stuck and don't understand the step I'm on. What should I do?

A: Reread the step you're on slowly, and if you still can't get it then contact me and I'll help you through it (contact info in the preface).

Q: Wouldn't *insert fancy filament here* or *insert fancy heat-resistant coating here* improve the baffles? Why didn't you use that stuff?

A: Yeah, probably. I didn't use HT-PLA or special coatings because I wanted to prove that regular annealed PLA could handle it. If you want to experiment with your own filaments and coatings, be my guest (and let me know how it goes). If you're going to use any special coatings, I'd recommend using it on the cone of the blast baffle, since that cone will be taking the brunt of the expanding gas as it enters the blast chamber (hence no holes, it needs to be the strongest baffle).